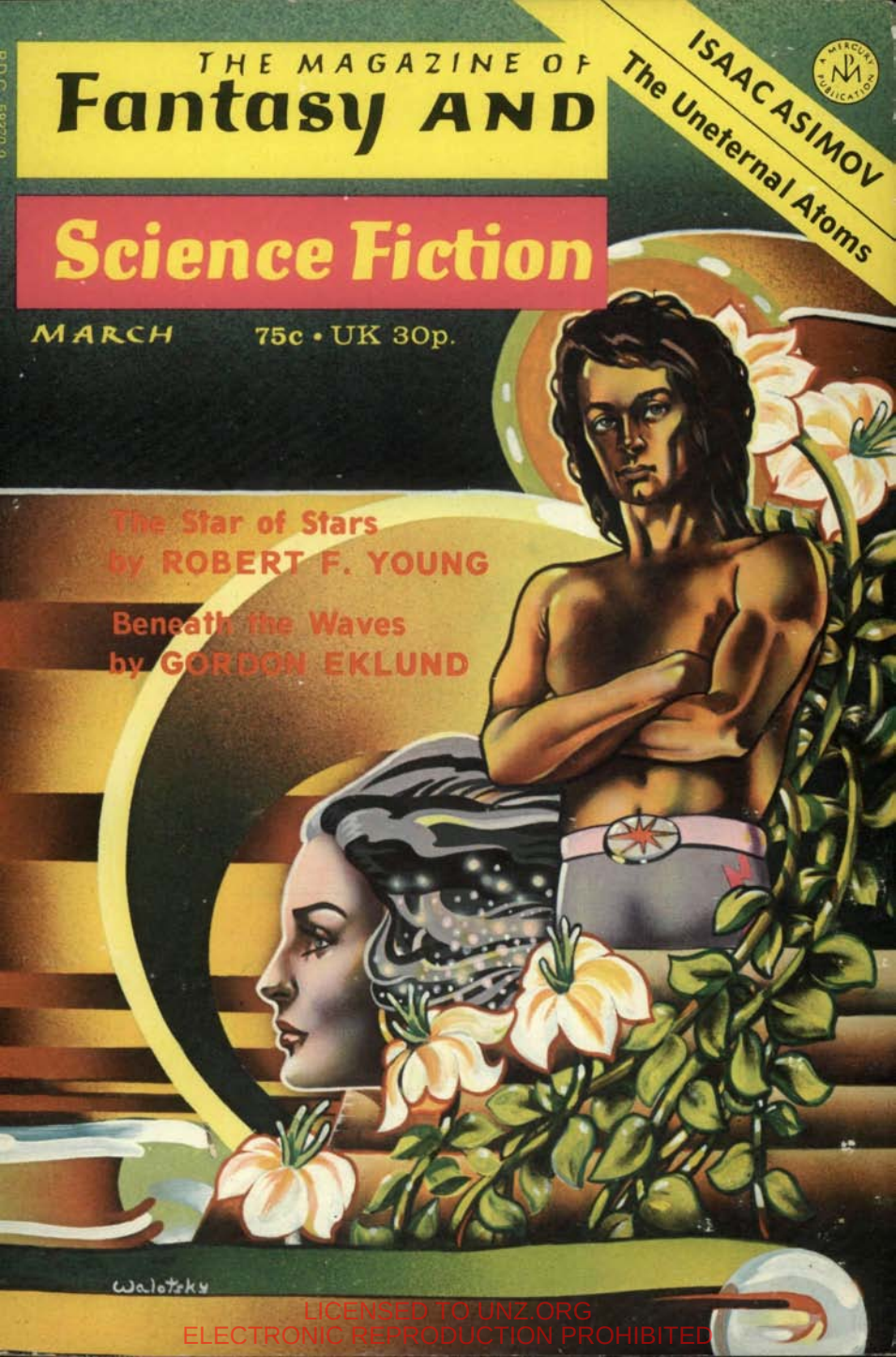

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Gordon Eklund (whose novel, BEYOND THE RESURRECTION, was recently published by Doubleday) sold his first sf story less than five years ago and has already established himself as the kind of solid, inventive storyteller the field needs to stay healthy. This, his fourth story for F&SF, concerns an enclave of merpeople and their efforts to convert an "upper" to their way of life.

Beneath the Waves

by GORDON EKLUND

I wish there was a way I could actually write this story — setting down the words in the traditional fashion — so it would have a chance to survive eternally, outlasting you and me and, if necessary, this whole silly planet; but, alas, that is not possible, since I've been unable to devise any method of putting pen to paper while submerged beneath several dozen fathoms of warm salt water. But I can tell you my story (after a fashion), and though I know you're only an old fisherman, I do hope you'll hear me out.

A warning, though: This is going to be the saddest story you've ever heard. So keep a handkerchief handy.

My name is Casamassima. I am a lady. Don't laugh. Just because I possess a tail, dorsal fin, gills, a beak and scaly hide doesn't mean you're any better than me. In fact, the truth is surely the opposite, for it was you uppers who came first and then us merpeople, and it would hardly make sense to create something inferior from something superior while the opposite carries a real ring of truth to it. However, I am not here to boast; I am here to tell a story. So I'm sixteen. Minus a day. I'm pretty — for my kind, you would say — for any kind, I would say. On bright nights, when both big moons dangle straight above, I am known to zip powerfully up, cracking the surface, leaping above the gentle waves, floating in the cool air, gazing down at where the loveliness of my visage lies reflected. Astin called me his divine princess; he once said I was a virgin queen of the deeps. Of course, we have neither queens nor princesses in our society. Once the sixteenth year is passed (as it soon will be with me), we are all totally equal.

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This particular day (here goes the story in case you're impatient) I was working the crops. Mother Jubal, the fattest and sternest merlady in the ocean, slaved next to me. I was the one who was bored. Just past fifteen, I was a wild child, contemptuous of the alleged wisdom of my elders. They said work while my heart cried play. I waited till Mother Jubal was busily engaged plucking certain ripe buds of the Shalmar plant, then glided up, streaking away like a demon eel, knowing the fat one had as much chance of catching me as a poor clam. Free, I felt the water rippling across my snout and beak and sent forth great waves of utter joy. Only for a year had I been permitted the freedom of the seas, and I still lusted in the way it thrilled my innocent heart. Rising up and up, nearing the surface, I squinted fiercely as the daylight sun came creeping through the waters above me. Then something big came floating past and I stopped.

How can I describe it? At first, I thought it had to be a dead fish, poor thing. Then I realized it was alive. Suddenly, its tail twitched. Dipping down, I swam a wide circle around the thing. Then I realized it was a merman, but a stranger, one who acted totally ill-at-ease in the water. Still circling, I threw him a thought: *Who the heck are you?*

My mind was open, ready to receive his reply, but what I got was such a vicious blast of clatter I had to erect a shield instantly to keep my brains intact. Cautiously, I approached the stranger. He floated in place, his tail twitching sufficiently to keep him from going down.

Who are you? I asked again, but this time my mind was sealed shut before his answer arrived. I had sensed the approach of more ugly clatter. For a moment, I was nearly set to go running home to the Shalmar crop. It was really that dreadful.

Then I opened my mind just a crack, peeked into his thoughts, and finally understood what was up.

The most difficult part of this narrative, I now can see, is going to be when I try to transform merspeech into upper words, because it's really hopeless. Although I'd known since childhood that uppers communicate by flapping their mouths and making funny noises, it wasn't until I turned fourteen and was sent to speak with the fishermen on the ships that I learned for sure it wasn't some stupid fairy story. We merpeople communicate through our minds — directly. We have no need for words, a language. I had been taught yours as a child so that I could communicate with the

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fishermen, but I still considered it a pointless waste of energy. When I want to tell another merperson something, I simply turn my mind toward his and go *blip.* Understanding, he replies, *blip* — as fast as that. So when I asked the drifting merman who he was, it was actually *blip* I said. His reply wasn't any blip and that was what had thrown me.

Now I understood. Speaking slowly, sending each word separately in the upper language, pretending this thick-headed merman was just a dumb (excuse me) fisherman, I said, *You are speaking upper talk. Mind telling me why.*

I am not a fish, he replied.

Of course not. My eyes testified to that. *You are a merman.*

I'm not that either. I am a man.

Which meant one of us was nuts. I returned to my original query: *Then who the heck are you?*

My name is Astin. I've been sentenced here. He wasn't deliberately sending this, yet I could not help receiving it: an awful sadness burned in his heart and soul.

Sentenced? I asked. *What for?*

I was called a traitor.

Then you're not a merman?

I told you — I am a man. I was. They converted me.

Naturally, I was shocked. But his sadness was so bleak I could not bear to make it any worse. I simply said, *I'll help you down.*

I want to die.

And I felt that he did indeed. Among merpeople, sadness is a genuinely rare emotion, felt most often during deathfeasts and deliberately muted even then. But Astin could not control his feelings, and that mournful sadness kept spilling over and out. I wanted to run away so bad it was making me sick.

But you're beautiful, I said, attempting to cheer him up. (Though he was. But how can I describe his beauty to you, except to say his body was fresh and sleek and new, which is hardly enough? I remember how Astin once tried to tell me of an upper lady he had loved. His description of her almost caused me to doubt the rationality of his memory. Beautiful? Oh, ugh.) No matter, I was already convinced, from his sadness, that I had never known anyone so utterly deep and wise.

But he laughed bitterly at my compliment. His own opinions were rooted in the past; he thought he was ugly too.

Please, I said. *Come with me.*

I won't come. I said I wanted to die.

Then I'll get someone to come and make you.

The police?

We have no such thing, I said smugly.

I felt his smile. *In that event,*

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lead on, little fish. And he pointed his nose downward.

I'm not a fish, I said, leading the way. He moved as awkwardly as a butterfish, always pointing his snout in one direction and wiggling his tail in the other. Finally, I had to try and help him, but that failed to work well either. Swimming is at least second nature to me — I was born doing it — but when I tried to show how it was done, I ended up turning circles myself. Embarrassing.

So we didn't communicate much going down. I found the slow word-by-word process of language exhausting, and though I was bursting with curiosity, I knew it would only make him sad to explain the events of his past. I did ask him his age, because it was impossible to tell. Except for the size, his body was that of an eight or nine year old. I knew he had to be older than that. (Well, I certainly hoped so.)

I'm twenty-eight, he said.

Oh, then you've made the pilgrimage, I said, with sadness.

Made what?

Then I felt stupid. Of course, uppers did not make the pilgrimage at sixteen. So I just mumbled an answer — easy to do without words — and concealed my joy. Astin was twenty-eight and yet as young and innocent as I. What a wonderful combination.

Finally, we came in sight of the seabottom. We were slightly off course because of his wanderings, and so we had to turn and go a few hundred meters before coming in sight of the enclave. As soon as we did, Astin communicated a gasp of utter astonishment: *I can't believe it.*

I didn't have the slightest idea what he meant. After all, it was only home. A typical enclave — and ours is pretty much that — serves as base camp for a hundred or two merpeople. The fields — largely Shalmar, but including a few other crops — stretch for several kilometers around. In the center is an open space about a kilometer in diameter, usually spotted with cave openings which extend deeply into the seabottom. These were dug centuries ago at the very beginning and are handy places to have when you want to escape the hustle of the sea and be alone. Ours are sufficiently deep that the whole enclave can take shelter when a dragonfish or other dangerous predator prowls by. There are also a few concrete buildings that were once covered with big glass bubble and inhabited by snooping uppers. But this was centuries ago and the spies were driven home long since and the bubble torn down. In all of this — crops, caves, buildings — I could find nothing to justify Astin's astonishment.

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I never realized you were so advanced, he said.

Well, what did you think we were?

I thought you just...well, you swam around.

And where did you think your food came from?

I understood that. But not — not this.

Then I felt dumb. But I was so accustomed to the sight I hadn't paid it any mind. A herd of horlan was being kept above the enclave. The horlan, largest edible fish in the sea, is sixteen or seventeen meters long — though I've seen old bulls as big as twenty-five — so you can imagine how much space a herd — say, a thousand or more — takes up. They hovered over the enclave, blocking all but the edges of the fields from our sight. Looking close, you could glimpse the herders moving among the great beasts, flashing soothing thoughts (which Astin could not hear), calming their charges.

Come on, I said. *The enclave is underneath.* I started down.

Hey — wait. Are you sure this is safe?

They're too dumb to hurt anyone, I said. But I had to add plenty more before convincing Astin to make the plunge. As much time as it took, we might as well have gone around. Astin kept drifting off course, bumping into horlan, getting them riled. One time, he nearly drifted into the open mouth of one slumbering beast, and I had to scurry like a water snake to save him. That mess managed to wake up a dozen more, who started flopping around, nearly squishing us. It was a miracle we got through that herd alive.

The actual sight of the enclave didn't impress Astin much after the horlan. We drifted slowly over the fields. Soon, a figure rose from a thick patch and came rising toward us. It was Mother Jubal. She raved at me the whole way: *Now you're going to get it. You've slipped away from me too many times.* And so on, but I'd heard it too many times.

When she reached us, I introduced to her Astin. *This is Mother Jubal, an elder.*

Your mother?

I gigled in spite of myself.

Then why do you call her that?

But Mother Jubal came to my rescue. It had taken her only a second to comprehend the situation, and so before I had a chance to explain a thing, she was questioning Astin in his own language. I settled down to listen in, but she shielded me out. That made me mad, but there was nothing I could do.

Finally, the shield came down and she flashed me a thought: *Get to work, Cassie.*

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But —

No arguments or I'll double your probation. Now get.

But I saved his life.

Did he ask you to?

Why, no.

Then it was none of your business to interfere. Now you move.

I gave her a dose of pure hate, but she bounced it right back at me. It hurt and I had to back off. By the time I cleared my mind, Mother Jubal and Astin were swimming toward the central caves.

Then I was really mad. I started to chase them, but saw it was useless. The elders were streaking after Mother Jubal. That meant a conference and, of course, I could not attend. Which was hardly fair. I just drifted, letting my anger get the best of me and enjoying every moment of it.

Finally, I went down and tore into the Shalmar with my beak, pretending each strand was Mother Jubal's pink belly. It didn't work; I still got bored. I tried casting spells on the plants. I said, *Whoever eats this, I hope you choke to death.*

But that was silly. I didn't know who was going to eat it, but it wasn't apt to be Mother Jubal.

You can choke anyway, I called to her, but in the deep recesses of the central caves, surrounded by the other elders, she could not hear a thing.

You uppers, I understand, like to do your sleeping at specially selected times. At night, you slumber constantly and then, during the day, you stay awake. Beneath the waves, there is neither night nor day, though we do keep a clock and calendar for various purposes. It is always dark but, to the keen eyes of a merperson, there is always sufficient light. So we just sleep whenever we get tired. I don't know what was wrong with me. The seabottom looked so soft, so inviting. I was asleep in an instant, experiencing a magnificent dream which is none of your business.

It was Isabella who came to wake me. Even then, I loathed her. I hate to interrupt the flow of my narrative every few sentences to insert a paragraph of description, and so I'll try to keep Isabella's story brief. In short, she was two weeks older than me but no smarter. Her personality resembled that of a dragonfish, her face and figure were identical to a sextopus, and her intelligence rivaled that of a dead clam. She roused me by digging her beak into my belly and snapping at the flesh.

I woke, dancing mad.

You're going to get it, Cassie, she said.

Says who? (Though I sleep a lot, I come alert in full possession of my wits.)

Says the Grandmother. There's

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an open meeting and you're missing.

Well, somebody should have told me.

Who told you to fall asleep?

I wasn't in the mood to suffer her pettiness. But I knew no open meeting had been scheduled for this time. So unless Isabella was hoaxing me, there could be only one reason for this break with routine: Astin. How dare they act without consulting me? Isabella was already swimming toward the central caves. I wasted no time in following.

I saw immediately that she wasn't hoaxing. Nobody else was around. We passed the young ones penned in their cages. An occasional herder drifted languidly past, plainly overjoyed at the sudden emptiness of the ocean. I spied Isabella's fat tail whisking into a cave mouth. I turned in after her. I had gone only a few meters when Grandmother's voice rattled in my head. I couldn't make out what she was saying. When I entered the cavern, she fell silent. Embarrassed, I tried to reach my place.

Casamassima, Grandmother called, shocking me to the core. I hadn't realized she knew my name. As always, Grandmother drifted in the center of the circle of elders. Mother Jubal was there and a dozen more. The society of an enclave is strictly divided into four castes according to age. At the bottom are the young ones, below age fourteen, and they are restricted in everything for their own good. Then come the adolescents — an example of which is me — between fourteen and sixteen. Adolescents deal with the fishermen and care for the young ones. Then, after the pilgrimage, full adulthood is attained. A male adult will most likely become a herder, though he must first pass a rough series of initiations. Females remain in the enclave and work in the Shalmar fields. After forty years of this, one becomes an elder. The Grandmother is the eldest of the elders. Only females are permitted this honor: males who remain in the enclaves are a sorry lot, too weak or stupid for any responsibility. The elders give guidance and preside over meetings. They conduct budding adults on the pilgrimage. Astin thought the elders constituted our government; I imagine many uppers would think the same. It isn't so. We have no government of any kind: that is our one and only law.

Come forward, Casamassima.

Yes, Grandmother. Torn between fear and pride, I approached the circle of elders.

Open your mind and permit us to see what lies within, said Mother Jubal. I did so. It was a strange

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sensation, like having the inner parts of the brain tickled.

Grandmother spoke to everyone: *What Mother Jubal has told us is true. We may now decide.*

Looking around, I saw Astin; he swam awkwardly on the opposite side of the circle. I failed to catch his eye.

Grandmother spoke: *This upper has arrived in our enclave uninvited. The question is, since he is here, should he be permitted a chance to adapt to our ways? Therefore, please indicate your opinions concerning Mother Jubal's proposals.*

We practiced the secret vote. Grandmother erects a shield, entering each mind individually. Nobody else ever knows what's going on. This time, I knew less than anyone. What exactly were Mother Jubal's proposals? When it came my turn to vote, I abstained.

Grandmother announced the results: *One hundred twelve in favor, three opposed, one abstention. The motion has passed. This open meeting is adjourned.*

I started to leave with the others, but Grandmother herself told me to stay. Then she left also, circled by the elders. Only three of us remained: Mother Jubal, myself, and Astin.

Sleeping again? Mother Jubal asked.

I was tired.

You nearly missed the excitement. Lucky I noticed you were gone and sent Isabella.

I should have been above anyway.

You know why you weren't. So be quiet and listen to me. Shutting Astin out, she spoke to me alone. *I recommended you,* she said, *so don't fail me if you can help it.*

Recommended me for what?

Nursery duty.

Oh, you know how I hate that.

Doesn't it depend on the young one?

They're all the same — obnoxious and boring.

Including him? She meant Astin.

He's older than I am.

Not any more. His age has been set at twelve. For the first few months, we want an adolescent to take special care of him. I suggested you, Cassie, since you're useless around here anyway. But I do want to warn you.

She always wanted to warn me. I didn't intend to let that affect my joy. I was just too, too happy. Ever since I had been sent down from the surface for a month's probation — meaning no contact with the fishermen and nursery duty and field work instead — I had been depressed. But, suddenly, I felt as keen as a newly born baby. *Go ahead,* I said, without fear.

Never let him out of your sight.

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Not for a single moment. When he sleeps, you sleep. When he's awake, you're awake too. You'll make daily reports to me. Everything he does or says, I want to know.

But how can I report when I'm watching him every moment?

I expected her to explode, as she usually did when I caught her in a dumb one. Instead, she smiled: *You'll have help.*

What?

Isabella.

Oh, no. I exuded more grief than I knew I possessed.

She's on restricted duty the same as you. And I know you two get along famously. At least you'd better. The slightest hint of trouble — anything like what happened above — and I'll send you both back to the fields.

But what can he do? He can hardly swim.

That's what we want you to find out. It's been centuries since the last conversion. We weren't even aware uppers still possessed the knowledge. Suddenly, here this man is. All our ancestors were uppers who came here in search of freedom. They reached an agreement with those who remained behind — the charter — they would provide the uppers with essential food in return for being left alone. But now the uppers have violated that charter. And we have to know why.

Ask him.

We have, but all he will tell us is that he was convicted of a crime. He was a traitor. But what exactly did he do? None of us can probe his mind. It's far too cluttered with words.

And you want me to find that out?

Yes.

But that's spying. It's an infringement of privacy. The customs —

Do what I say or we'll get someone else.

That, in itself, was an awesome violation of custom, but I had a strong feeling Mother Jubal meant what she said. So I said, *Yes.*

Good.

And she removed the shield, permitting Astin to hear. Our conversation — to him — had lasted only the blink of a second. I sent him a weak smile, which he returned full-force. Already, he was learning.

Mother Jubal told us: *You are now free to go. Isabella will relieve Cassie after twelve hours. Your shifts will then alternate.*

Yes, Mother Jubal, I said, setting an example of politeness, though it hurt.

And Cassie, she said.

We had already started off. *Yes, Mother Jubal.* I knew it was coming.

Make sure you stay awake.

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Wonder of wonders, I did. And it was easy. Of course, the knowledge that a single slip would send me shooting back to the Shalmar fields with my place no doubt taken by some timid being easily controlled by Isabella provided me with a certain incentive. And talking to Astin was fascinating. In fact, ugly Isabella showed up much too fast for me, and I was ready to dispute her sense of time till, catching a vague tingling in my brain, I realized Mother Jubal was listening in.

Now you get out of here, Cassie, Isabella was saying. *Twelve hours is twelve hours.*

And dumb is dumb, I replied, setting off. Sometimes ignorance is better than knowledge. Of course, I couldn't sleep, but in many ways it was better not knowing what the two of them were up to. You see, it had taken me only that long — twelve hours — to fall in love with Astin. I tried to keep a check on my imagination. I knew I had to learn to trust him. But it wasn't him I didn't trust; it was Isabella.

Maybe I ought to explain what happened on the surface between her and me, the reason both of us were on probation when Astin arrived. Long before that, we had hated each other, but from a psychological viewpoint, this previous incident has considerable impact on the story to follow.

His name was Luther Calkins. He was third engineer on the *Spartan.* Maybe you know him personally. I was never in love with Luther; my interest in him was purely objective. I was following the *Spartan*, supposedly detecting various batches of edible fish and directing the ship to where they lay. Isabella was my assistant. As always, she was bossy, and so I let her do most of the work.

That's how I started talking to Luther. As you know, we're only supposed to talk to the ship's operations officer. But I'd been circling the ship, just drifting and thinking, when Luther spotted me. *Hello there,* he said.

I am always polite. *You may call me Casamassima.*

I could sense his surprise, suddenly finding a voice in his mind. He recovered nicely: *That's quite a mouthful.*

Nobody was asking him to say it. I replied, *Then call me Cassie.*

After that, we spent a week talking. Luther had been born on the *Spartan* and had left it only once in his life. I learned about the workings of nuclear engines. I also learned how uppers cannot so much as dip a foot in the ocean without going mad with fear. I told him a few things about our society, but he didn't believe me. Luther was kind of stupid.

Then, one day, Isabella caught

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us talking and tried to butt in. Luther got an awful headache and rushed to the ship's infirmary. An officer was called, and he told the captain, who told the operations officer, who told Mother Jubal, who sent both Isabella and me scurrying back to the enclave, restrictions heaped upon our backs like barnacles. But I do not think it was my previous knowledge of upper psychology, gathered from dumb Luther, which caused Astin to be drawn to me.

Our love was never one way. Four hours after leaving the central caves, he said I was his divine princess of the seas. *You are beautiful, Casamassima.*

You're beautiful, too.

He did not demur. And I guess that was that. As far as I was concerned, our love was sealed.

Astin and I usually occupied our twelve hours in simple drifting, observing, talking. After the first few days, when he still moped quite a bit, he developed an insatiable curiosity concerning his new environment. Knowing everything, I was the perfect creature to help. We didn't travel far at first, knowing a predator could easily nab him, but as his swimming improved, our journey grew longer. Much of what he wanted to know was not something you could touch or feel; Astin was an intellectual, and so it was only something you could know.

So there isn't any government except that in each enclave, he said. *Each is a separate state.*

We don't have any government, I said, not for the first time. We often discussed this subject. *It is forbidden by custom.* We drifted in midocean. Tiny fish — a huge school of tasty midwough — swarmed around us. Occasionally, I gobbled a few, hoping Astin would do likewise. I was afraid he was failing to adapt to our dietary habits.

But I know better than that, he said. *What about Mother Jubal and the elders? They tell you what you have to do.*

Only because I'm an adolescent. When I'm an adult, I can do what I want.

And the Grandmother? She tells everyone what to do.

No, she doesn't. She is respected because of her age, but if we don't like what she says, we can always vote her down.

And how often does that happen? Once a year, twice? Has it ever happened?

Well, yes.

When?

Not lately. But — you have to understand — the Grandmother is very wise. If she wasn't, she wouldn't be so old.

I call it a government.

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Well, it isn't. (I didn't think.)

Other times, we discussed more personal issues, such as me. Astin [redacted]n said I was the one creature he known — upper or merperson — capable of truly comprehending his soul. He rarely alluded to his upper life — I knew how sad it made him — but this one time we sort of slipped into the topic. Later, I wished we hadn't.

But there must have been somebody up there who was a friend.

Only that girl I told you about, he said.

The one who gave me a stomachache?

He laughed. *Yes, her.*

And where is she now?

Dead, he said.

Oh. I had never realized uppers could die except when they got too old; there were no predators up there.

She was convicted with me. Again, he laughed. *But her crime wasn't so severe as mine; so they only killed her.*

Who killed her?

The government.

I sent him a carefully controlled dose of fear. *And she let them?*

The choice was hardly hers. First, they put us in prison. (He offered me a vision of a huge brick building — acres wide — and then a cell, barred and sealed,) *Then they went and read the law. It had been so long since they'd had a real criminal to deal with they didn't know what to do. She was convicted of sabotage. The penalty, the old books said, was death. So they hanged her.*

He showed me a picture of that too. I was sick. It was the second most horrible thing I have ever seen in my life (the first, alas, comes later), and I have never been so deeply shocked. I knew how thankful he must feel to have escaped such a monstrous world.

And it could happen here, he added.

I was glad he had. Being able to laugh eased much of the tension. *But what happened to you?*

Just what you see. I was a traitor.

But why? I know it sounds as if I'm following Mother Jubal's instructions, prying, peeping, spying, but actually I wasn't even thinking of that. Loving Astin, I wished to know everything, good and bad.

A traitor is a person who supposedly violates the sanctity of their state. And the punishment is conversion. Of course, I was horrified, preferring death, where at least I could be a martyr; it's hard to rally people to the side of a fish.

But why did they do that?

Centuries ago, the first merpeople were all like me — rebels.

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Yes, we are taught that. They came in search of freedom.

Some did, yes, but many others were sent down in spite of their own wishes, convicted of so-called treason. But with all the rebels beneath the waves, the will to resist faded away. For centuries, everyone was obedient and helpless. Till I came along. I was the first man in years and years to recognize the obscenity of their system. And I was willing to fight.

You alone?

There are others — more each day.

But what did you do?

I destroyed a computer.

How?

Explosives, dynamite.

But that might have hurt someone.

It did. A few. Three men died. I'm sorry about that.

Oh, I said.

It was just a machine. But they caught us — me and the girl — and paraded us through the streets of their cities. We confessed with pride, resisting till the very end.

Was it worth it?

If you lived above, you'd never ask that question. He was sad now — sadder than I'd felt him since that first day. *No man is free. Each is barely a human being, merely a machine — no, worse than that, each is merely a cog in the biggest machine of all, which is the state. I wanted to give people a chance to live freely once more, I tried — we tried. But I failed. We will not. We must not.*

It's better here, I said, finally realizing the significance of what he had confided to me. Now I was regretting every question I had asked.

Oh, is it?

After this, needless to say, I wasn't exactly looking forward with eager anticipation to my daily interview with Mother Jubal. In fact, I made an effort to slip past her as if I had simply forgotten, hoping she would interpret my forgetfulness as evidence of having nothing pertinent to say. She didn't. She caught me. And away we went to the lip of the central caves, where we could talk without interference. As always, she erected a shield.

Well? she said, giving no evidence to indicate I had aroused her suspicion. *How did it go today?*

We talked about the government. The same as always.

Have you convinced him yet?

About us? No, not yet.

I hope he hasn't convinced you.

Oh, no. Actually, he might have, but Mother Jubal was constantly supplying me with effective counterarguments to use against him.

You have to remember, Cassie,

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that Astin comes from a totally different world. Their life is one we can barely imagine. I recalled the scene of the hanging and knew what she meant. *Freedom up there is very limited. Some people tell others what to do, and the others have no choice but to say yes. They have nothing like the sea. Down here it would be impossible for anyone to establish an authoritarian system, for those of us who didn't like it would simply swim away. The enclaves exist for the purposes of mutual aid; once they cease to serve, then they will cease to exist.*

What about the charter? Don't we have to provide food for the uppers?

That's self-preservation. They never would have allowed our ancestors to come here except for that.

Then if the enclaves break up, the uppers will kill us all.

Centuries ago, they might have done that. But not now. I see Astin has been making some good points. But I think they could survive without us.

Astin said they couldn't — the food from the seas was absolutely necessary for survival. But I sensed this was not the right time to argue with Mother Jubal.

And that's all you talked about?

Oh, that and the usual other things.

And his past? His reasons for being here? He said nothing about that?

She asked every time. I'd been hoping — just this once — she might forget. So far, I had not lied to her, merely avoided telling all the truth.

Nothing, I said, with a concealed sigh. *Not a word.*

It had been neither easy nor fun lying to Mother Jubal, yet I thought it was pretty necessary. I was sure she'd make the wrong assumptions if she knew the exact nature of Astin's crime. Something had happened the day before.

Old Ben had died. That was two days ago. Nobody was too much surprised. Ben was close to a hundred and ten, older than the Grandmother. So his natural end could not have been too far removed in time. He had joined the enclave only a few years before and hardly anyone knew him, except me; Ben and I had talked considerably at one time, though I'd been ignoring him since Astin's arrival and now regretted that hugely. Ben was dead and I was sad. All his life Ben had been a herder till he'd finally become too old and slow. The herders usually took care of their own old and infirm, but Ben insisted he didn't want to be around the herds unless he could help. He was proposed to several

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enclaves but voted down till we finally said we'd accept him. It was a good choice. Ben worked harder than anybody in the fields — especially me! — and never was known to bother a soul. All herders are like that — very private people. And Ben knew a lot about a lot, having seen things in a hundred and ten years beneath the waves that most of us would never have believed. They were true, though.

An eel got him. I wondered if it was deliberate. Ben was old and not fast but too smart to get caught that way. It wasn't even a particularly big eel — less than ten meters. It chewed Ben nearly in half. Fortunately, some herders happened to be nearby — thus increasing my suspicions — and they drove the eel off and rescued Ben's body. If you hit an eel on the snout, it will run, which Ben knew as well as anyone. I remember telling you earlier that suicide is unknown among us. I meant suicide for reasons of self-pity; Ben wasn't the least bit sorry for himself. He was just ready to try something new.

The deathfeast was scheduled right away. If a person is dead, there is no logical reason to keep him waiting in limbo. I was with Astin when I heard. I told him to stay where he was — we were floating above the enclave — and raced off to find Mother Jubal.

You may attend, she said, *but Astin better not.*

I thought you wanted him to learn our customs.

Yes, but only a few at a time. I don't think he's quite ready for the deathfeast. I'll ask Isabella to relieve you so you can go. She didn't know Ben.

I don't know what's supposed to be so disgusting to uppers about the deathfeast. In my opinion, it is one of the most beautiful events in creation. One thing, it's certainly more civilized than hanging live people by their necks.

Isabella showed up instantly and I swam off toward the Deep. The whole enclave was going too, plus a few herders who had known Ben and were near enough to attend.

The Deep lies between several enclaves, all of which share its waters. It is thirty or forty kilometers wide and nobody knows exactly how deep — only that it goes down and down. And the Godlings live there.

Ben's body lay in the water just at the edge of the Deep. Despite the crease in his midsection, he looked fine in death. The seabottom drops off suddenly at the edge of the Deep; the cliff face slanting down is sharp and almost smooth. All of us went to the edge and waited. Then Grandmother appeared and hovered beside the carcass.

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Speaking into everyone's minds, she intoned: *This moment we are gathered at this sacred place to express our deep respect for the body and soul of this man whom we all knew, his existence brightening our lives with its presence in our midst. Now it is our proper duty to return him from whence he originated, with our firm conviction that nothing is ever at an end, that all of what we call life is merely a beginning. We loved him dearly in life and choose to revere him fully in death. Permit his soul to depart now upon its next journey; allow us to become as one with his body.*

Then, demurely, with a reverence I have never been able to duplicate, Grandmother opened her mouth and bit deeply into the flesh of Ben's chest. Carefully, she chewed, clearly experiencing the fullness of his past nature. Swallowing, she sighed, then swam back.

Approaching, the next elder did the same. I was near the end of the line because of my youth and had to take my bite from Ben's leg. Chewing, I sensed his presence at the outermost range of my senses. I felt he was happy where he was now, though soon he would be leaving upon the sacred journey. In life, he had always been happy too. I wished him my best as I continued to chew. I tried to express my love. Then I swallowed and swam back.

Mother Jubal says this is the portion of the deathfeast which disgusts the uppers; they call it cannibalism. I can hardly see why. By consuming the bodies of our dead, we are merely drawing them into ourselves, adding their natures to our own, and what could be more wonderful than that? The dead are dead: their souls are gone. So why should the empty barren bodies, so long inhabited, be allowed to rot unmourned.

When the feast was done and everyone had eaten, the elders reached out and clasped Ben's bones and carried them down into the black waters of the Deep. The elders performed this act mentally — without physically budging. It is a talent only elders possess and it is used only during deathfeasts. Later, Grandmother spoke, informing us that a Godling had appeared to accept the gift of Ben's remains.

So the deathfeast was ended.

Despite the reverence I felt for the occasion, I was eager to return to Astin. So I hurried, streaking ahead of everyone else, and thus I was the one who first saw what had happened.

A whole corner of the Shalmar crop had been uprooted. Thin leaves floated everywhere, the roots had been torn from the seabottom, the vines sliced in half.

I sped to tell Mother Jubal, who

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was as shocked as I and twice as angry. Nothing like this had happened in anyone's memory. It looked like deliberate sabotage. Of course, Astin and Isabella were thoroughly questioned, but neither had seen a thing. They had been way over at the other end of the enclave and had heard nothing.

But that was the reason, if no other, why I decided to keep my knowledge of Astin's crime a secret. Sabotage is sabotage. The situation was wholly different down here. I knew that and so did Astin — but would Mother Jubal?

I quickly formed a theory to explain the tragedy in the fields. It was, I admitted, a rather obvious one, too much so, and it was with some diffidence that I expressed my ideas to Mother Juba. As soon as I spoke, she shut me off, changing the subject radically as though afraid to hear. I couldn't understand why.

My opinion was that the sabotage had to be the work of another enclave. My reasoning was sharp, crystal clear. Everyone in our enclave — with the exceptions of Astin and Isabella — had been attending Old Ben's deathfeast when the sabotage occurred. Astin and Isabella provided each other with an alibi. The work had been done systematically, intelligently, and so it could not have been a dragonfish or an accident of nature. So what did that leave: only merpeople. And merpeople who did not belong to our enclave. Ergo, it had to be someone — or several someones — from other enclaves.

It wasn't until several days later that I discovered the official theory was not mine. Burdick was an old, old friend. Truth to tell, he and I had been snugly close at one time — ironically, that had caused another hassle between nasty Isabella and me — but this was before Astin's arrival. Burdick was bright, open-minded and cute. Though I hadn't seen him much lately, I still appreciated his existence.

I was snoozing on the ocean floor when somebody woke me up. Seeing Burdick, I felt instant regret at ignoring him for so many days. The time of his sixteenth birthday — and thus the pilgrimage — was fast approaching. There was always a chance he might never return.

I have two more days, he said, in answer to my question.

Then I'm glad you came. I might have missed you.

He exuded amusement. *I haven't been lost. But that's not the reason I'm here.*

Oh?

It's Maria. She's birthing and wants you to attend.

Me? I was frankly astonished. I barely knew Maria — a young

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adult female, dumb and ugly — and requesting an adolescent to attend a birthing was nearly unheard of. The honor made me feel very proud.

She said so. We better hurry.

We set off immediately toward the birthing area.

On the way, Burdick explained: *I asked Maria to ask for you.*

My first reaction was jealousy. *I didn't know you knew her that well.*

Oh, Maria and I have known each other forever.

But why did you want me? I asked.

There's something I have to talk about. I don't want anybody to see us together without good reason.

But we're always together.

Not lately.

Well — what?

I'll tell you later. You still have to attend the birthing. That part is for real.

Uppers, I understand, believe merpeople give birth by laying eggs and then squatting over them for a few weeks. Something like that — absolutely incredible. I repeat: we are not fish. I don't know what we are, but we're more mammals than fish. True, we possess gills, fins, scales; our blood is cold. But we were originally men the same as you, and as far as childbearing is concerned, we still are. In fact, the only difference between our races is that we're better at it. Merchildren are born swimming. Within a few days, they are capable of intelligent communication, not having to depend upon a knowledge of words. Breast-feeding lasts only three weeks. Education is begun before the end of the first year. And we live longer than you, too.

When I arrived, Maria had hardly started. Burdick sped away, but I sensed him lurking nearby, waiting until return was possible. Attending a birthing is largely a ceremonial function. All I could do was swim circles around Maria, striving to communicate a sense of utter peace and tranquillity, the overwhelming rightness of the birthing process.

But Maria knew all of this as well as I did.

The baby popped out suddenly, spouting bubbles. I chased him and caught him in my beak.

Well, who gets him? I asked, returning to Maria's side, though I took special care to conceal the child carefully from her sight.

Which is it?

A male, I said, after a strategic peek.

Then it's supposed to go to Mother August.

Fine. I'll run him right down. You're all right?

Yes — I mean no. Please wait. She tried to slip around me, but I prevented that, darting back.

Get away from me, Maria.

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But, Cassie. Please. Just let me see for a second. That's all.

No, I said, shocked and disgusted. Now I knew why she had agreed to Burdick's suggestion that I attend the birthing. She wouldn't have dared ask that favor of any adult. I decided to let her have a brief peek into my mind, a glimpse of the disgust. The emotion drove her back. I slipped away, taking the child. Maria was required by custom to remain away from the enclave for two years; it was the price demanded for the privilege of giving birth. After two years, she could return, but by then it would be nearly impossible for her to tell which of the infants in the pens was hers.

Astin once explained to me how uppers raise their children. I would take this opportunity to express my deepest contempt for those practices, particularly the total inequality of the system, forcing an innocent child to suffer because of the station of his parents, but, candidly, the whole thing makes me too sick to discuss it.

Burdick caught up with me and erected a shield. *Who do you think it was?*

I was glad of the chance to forget Maria's crassness. And I knew exactly what Burdick meant. I told him my theory.

Marauders are more likely, he said.

But none has been seen around here in years. Marauders are merpeople expelled from the enclaves. This happens very, very rarely, which is why I hadn't considered the possibility.

Did you tell anyone? he asked.

Just Mother Jubal. I tried but she wouldn't listen.

I tried to tell her too. I have my own theory. And it's more than just guesswork: I saw something.

What? I asked, suddenly filled with dread.

A submarine.

What? It took me a moment to understand the concept; Burdick provided me with a picture. A submarine was a boat that swam under the water and carried uppers. Burdick hung around herders a lot — he wanted to become a chief — and knew a lot about esoteric subjects. At least, he thought he did.

When?

The day before it happened.

Where?

Just beyond the enclave. At needle point. That is a tall rock formation — a perfect landmark beneath the sea.

And you think they did it? Uppers?

No. They can't leave the submarine. They're afraid of water.

Then what?

I think they gave the orders. They were here for some reason. It

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was a small three-man sports craft. They're very common around the coastal areas, but you never see them way out here.

But why? I insisted. *What was their motive? The Shalmar is food for them, not us. Why would they want to destroy it?*

I don't know, he said.

Then why tell me about it? Strangely, I was almost angry with him.

Because you know him. The upper — Astin. I think he has to be the one who did it.

That's stupid. Isabella was with him the whole time.

Was she? I tried to talk to her. She wouldn't say a thing. I think she's fallen in love with him. I'm sure she'd lie to save him.

She would not. If he was a saboteur, she'd tell. It seemed funny — me defending Isabella. But I was in no mood for laughing. Besides, I knew she wasn't in love with Astin. She had better not be.

Burdick went on: *Then I went to Mother Jubal and told her. She wouldn't even listen. Would you believe it? She said it was done by a Godling. Why? It was divine punishment. For what? She didn't know. It's all stupid superstition.*

Godlings are real.

But they don't go around tearing up crops. How many have you ever seen out of the Deep?

It could happen.

That's stupid, he said. As I mentioned, Burdick thought he was awfully bright. That was another thing he'd picked up from the herders. Traveling all the time, they do not possess the same deep reverence for Godlings that we have. They don't know them as well, seldom having any contact after the pilgrimage. *My theory is the only one that makes sense. It has to be right. I knew all along there was something wrong with that Astin. Why else would he be here? They only send their criminals down.*

He's not a criminal, I said. *He asked to come down.*

What? How do you know?

He told me — showed me. And he wasn't lying. He wanted to come here in search of true freedom, the same as our ancestors. He's no more a criminal than you are.

He radiated disappointment. *Don't tell me he's hooked you too, Cassie?*

I would have none of that. *You're the liar,* I told him straight out.

He wanted to answer that, but I never heard him. I got my shield up just in time. Then I swam rapidly ahead. Later, when I looked back, he was gone. I didn't miss him. Finding Mother August, I turned the child over to her.

From there, I hurried off to find Astin. It was already past my shift,

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and I didn't intend to allow lovey-dovey Isabella an extra second of my time.

As soon as my shift was up, I turned right around and crept up as close as possible without being observed. If there was any love being expressed between Astin and Isabella, I felt I had a right to know about it. If not, I intended to find that out too, so I could throw it in Burdick's face when he returned from the Deep.

I have to admit that I was a little nervous at first, listening in, but soon enough I was just bored. Astin and Isabella spent their time in a rather aimless way. She kept pointing out fish to him, identifying this as this and that as that. I bet she got half the names wrong. Astin wanted to discuss those subjects that interested him: society, government, systems and beliefs. Isabella's ignorance was deadly. He already knew more than she did. It was my regret that Mother Jubal never overheard any of this, or else I'm sure she would have fired ignorant Isabella on the spot.

Instead, it was me who got caught.

Cassie, said a voice in my mind. *What do you think you're doing?*

Oh, just swimming, I lied, attempting to radiate innocence.

And Isabella and Astin just happen to be only meters away?

Oh, are they?

Since you have nothing to do besides violating the privacy of others, I think you can assist me in the fields. We have a lot of work to do today. Head that way.

But this is my free time.

For eating and sleeping: not for breaking customs.

I could see there was no use arguing. Among us, the right of privacy is inviolate. Even for idiots like Isabella. Sighing, I moved off to accept my just punishment.

Better be less noisy next time.

What? That wasn't Mother Jubal. I would have known that stupid tone anywhere. Now I went into a dreadful rage, turning right back to do Isabella the justice she deserved.

Cassie. This was Mother Jubal.

I stopped. *Didn't you hear her? She knew I was there all the time. She's a liar and a —*

Just because you think she's a fool doesn't mean she's required to act like one. Now you get to where I told you.

Yes, Mother Jubal.

Isabella's graceless giggling followed me all the way back to the enclave. Or so it seemed. I erected a shield to keep her out, but Mother Jubal battered it down.

No, no, she ordered. *Accept your proper punishment.*

Yes, Mother Jubal, I said. *Yes, yes, yes.*

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I slaved in the fields for eleven horrible hours and then sped off to find Astin. Mother Jubal had already gone toward the Deep, where Burdick would shortly be leaving on his pilgrimage. All the elders, except those burdened by nursing infants, would be there to see him off. I have always wondered what happens then. Is some flash of last-minute insight provided the pilgrim, or is he sent off still ignorant into those black and bottomless waters? I still don't know the answer to that one, though I shall soon be finding out.

I came upon Isabella and Astin almost exactly where I had left them. Without a word, I relieved Isabella. Then I waited till she was safely out of sight. Diffidently, I asked Astin what he wanted to do, half afraid he might be angry at me for spying. I had a lie already concocted to explain my actions, but it proved unnecessary. Astin said he wanted to talk, giving no hint of knowledge against me.

So we drifted off. At first, I kept silent, trying to get myself to relax. We moved past the edge of the Deep, and I could sense the strong presence of the gathered elders. Properly, I moved us straight away from there. Astin had never indicated an interest in our religious beliefs, and since it is a thing difficult to discuss, I had never broached the subject. I knew that uppers were unaware of the existence of the Godlings: that was deliberate on our part — what they didn't know, they couldn't harm. But I was shocked to discover that they possessed no religion of any kind. In that event, how do you manage to explain the existence not only of yourselves but of the whole universe as well? Don't you think there is an answer?

Anyway, as usual, Astin and I ended up talking politics.

Today, specifically, he wanted to know about crime and punishment among us. As a frequent criminal, I was well equipped to answer.

I think we have only one real punishment, I said. *Banishment.*

Even for murder?

That never happens.

But if it did?

Then I suppose the murderer would be banished. Unless there was a good reason for the murder. A vote would be taken.

Well, then treason? Like what I did above?

The same, I suppose. What else could we do? Isn't that what happened to you?

Yes, but they also kill.

I answered hastily, before the picture of the hanged woman entered his mind: *But that would be the same as murder, and we never do that.*

Above, they believe that official

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murder is all right. Only murder committed for private or personal reasons is a crime.

But that's backwards. What's the point of killing someone after they've already acted?

So they won't do it again.

But why should they?

Well, what crimes do you have down here?

I tried to remember some of the worst. *There's laziness,* I said, choosing my favorite crime. *That's when you're assigned a specific task and fail to perform it.*

And the punishment?

Usually extra work.

And if you refused to perform the extra work? What then?

Well, you'd be allowed to present your case. Then a vote would be taken.

How often does banishment occur?

Hardly ever. Not in this enclave — not since I was born.

But it does happen?

Oh, yes. Then you can try to join another enclave. We have a couple people like that. Grandmother questioned them and was convinced they'd suffered enough. So we voted them in and they've done all right. The others — those who can't get an enclave to accept them — they just drift. We call them marauders. I've heard of them but never seen one. It must be awful to be alone in the ocean.

What about disobedience? A vote is taken and you refuse to abide by the results.

When he asked questions like these, Astin proved beyond a doubt that he was not yet really one of us, for I could never understand his reasoning. *But why would somebody do that?*

Well, if you were right — or thought you were — and everyone else was wrong.

Then you could present your case and show you were right.

But if somebody was too stupid to know.

But they're not stupid.

I hope you're right, he said.

I almost got really angry with him for that. It seemed to me he was insulting the whole enclave.

Guessing my reaction — or maybe capable of feeling it by this time — he apologized hastily. *I don't mean down here. I was talking about above. There, people are often stupid — and wrong.*

I accepted this. We had come a long distance. Suddenly, I ordered him to stop. Up ahead, the seabottom was churning as though ripped by a massive storm,

What is it? he asked.

Be careful, I said, edging forward, keeping him behind me. I knew this was going to be highly dangerous. If I was smart, I'd have turned us right around and headed straight back for the enclave. But I

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preferred being dumb this once. If care was exercised and one did not get too close, the sight was worth any amount of peripheral risk. We headed upward, rising above the tumult.

Astin said, *Wow.*

I could only echo his feeling.

The battle raged directly below us: a dragonfish and a sextopus. The two creatures normally inhabit different sectors of the ocean and seldom meet, but when they do, the fight resembles a small war. Dragonfish, I believe, are known to uppers, though they never venture close to shore. This one was smaller than most, probably a female, only about thirty meters from snout to tail, a long slender fish, as skinny and mobile as a snake or eel, with jaws big enough to engulf a mite such as myself and teeth as sharp as steel needles. A sextopus is also a huge thing — this one about fifteen meters in length, three-quarters of this consisting of six suction-cupped tendrils extending from the cylindrical trunk. Normally, a sextopus is a slow-moving, corpulent beast, but this one was fighting for its life. Although the fight had just begun, the end was sure. The sextopus was doomed the moment the dragonfish decided to attack.

But this did not decrease the intensity of the battle. The two great creatures bounced and rolled across the seascape, creating an underwater maelstrom that rocked Astin and me as we tried to watch. Slowly, as if with deliberate care, the dragonfish bit through each of the sextopus's tentacles, letting the bleeding members drift away, till only one tiny stump lay attached to the torn trunk. Then the dragonfish swam back, moving in a circle, darting in for an occasional bite, lunging back.

We better start, I cautioned Astin. Slowly, we moved downward.

It won't come after us?

Not unless it sees us. Their eyesight is terrible. And it'll want to finish feeding first.

The moment I finished speaking, the end came. Lunging forward, the dragonfish opened its mouth and caught the sextopus. It bit down, waggling its narrow head viciously. Then, holding the dead sextopus between clenched jaws, the dragonfish glided off. Fortunately, it headed away from us.

We still have to hurry, I said.

Astin's swimming had improved tremendously during the past few weeks, and he hardly held me back at all. We dashed toward the enclave. Anytime a dragonfish was spotted, it was a potentially dangerous situation. An alarm would have to be sounded.

But as we approached the enclave, my senses caught the presence of another creature, one no less hostile than the dagonfish

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but not nearly so dangerous. I nearly laughed, stifling myself just in time. In the excitement of the undersea battle, I had failed to keep my senses sharp.

So Mother Jubal had not yet returned from the Deep, I thought.

The fact that I repeat the following incident in all its gory detail is proof, I submit, of the ultimate honesty of my tale. You may hate my vicious, callous heart if you wish. But I'm no liar.

What did you think of that? I asked Astin, speaking clearly, deliberately, but not loudly.

It was incredible.

We were very fortunate, I said. *If it hadn't been for the sextopus, we might not have seen the dragonfish till it was too late. I'm afraid I was too wrapped up in our conversation.*

We couldn't have run away?

Not if it had seen us. Where could we hide? One of us might have made it. I would have attracted the dragonfish's attention and led a merry race while you went running back to the enclave.

I had my hopes; Astin answered them doubly: *I wouldn't have let you do that.*

No?

I should have been the one to lead it away. You can swim faster than me.

It would have killed you, Astin.

Better me than you.

Why? I asked (oh, so innocently).

Because I could never allow you to give your life for me.

That's wonderful of you.

No, Cassie, you're the one who's wonderful.

I could love you for saying that, I said, hoping, hoping.

You could?

I do.

I love you too, Casamassima.

Repetition could not hurt: *I love you, Astin.*

Ah, revenge, revenge! So sweet, sweet, sweet! (Or so I thought at the time.)

He tried to snuggle close, but I had to drive him off, for there wasn't time now for anything except running.

When we reached the enclave, the only elder about was Mother August. I told her of the dragonfish and she immediately clanged the alarm. The elders came streaking back from the Deep; Burdick was safely on his way. Everyone gathered near the caves. Grandmother appointed pairs of adults to keep watch on the dragonfish. Not until it was definitely known to have gone away could we return to our normal duties.

Then is everyone here? Grandmother asked, as a few more people joined us. *We're not missing anyone?*

The elders counted minds.

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One said, *I can't seem to find Isabella.*

Isabella, are you here? Grandmother called, her signal sweeping the surrounding waters.

But the vast ocean was silent. No answer was heard. Isabella did not seem to be there.

A few hours later, a pair of watchers found Isabella. Actually, I shouldn't say that — what they found were a few broken bones. The dragonfish had been very hungry.

Innocence is a period of life that ought to be loved and cherished, for it comes upon one slowly, building over the years, but departs with such abrupt suddeness that it is gone forever before one even realizes that it cannot possibly remain. My innocence had fled — chased away by a cry of love, a vow of adoration. And now I lay alone with my guilt and remorse. Astin swam near. I could never explain to him. Burdick was hundreds of fathoms below, conversing with Godlings, discovering the meaning of a thing called life, a state of existence Isabella was to experience no longer. Merpeople, sadly, cannot cry. We are limited to internal tears of the mind and soul. These I shed without hesitation.

Finally, Mother Jubal called me over. We drifted. Erecting a shield, she asked:

What's wrong now, Cassie?

In a rush, I confessed the whole of my awful deed.

And you blame yourself? she asked.

Who else?

Why not Isabella? She's the one who's dead.

No, I said, wishing I could accept her simple solution. *She's dead only because of what I did. If I hadn't taunted her, she'd be alive this minute. I was angry — I didn't like her spying — that's all. To me, it was nothing more than a funny game. I made him say what he did. It killed her.*

Did you bite his snout? Or pull his tail?

What?

You said you made him say he loved you. How? If it's that simple, I'd like to know myself. How about that young fellow swimming over there. Can you dash over for a second and make him say he loves you?

I knew she meant well. In fact, I nearly smiled. *But I hardly know him. It's completely different from Astin.*

In what way? I'm afraid I don't see it, Cassie. Maybe our whole theory is wrong. Maybe the older you get, the less wise you are, rather than the opposite, because if you are capable of making someone say that he loves you when he doesn't, then you are a far wiser person than

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I am. If, however, Astin merely told the truth — if he said he loved you because he does — then Isabella should have accepted the truth. Love does happen. It's a natural occurrence. At your age, it is seldom a permanent affliction. If something so inconsequential was sufficient to kill Isabella, then I am not sorry. She was weak and foolish, and such people can only harm the enclave. We expect adolescents to be silly and romantic — and that includes you, Cassie — but we do not expect them to allow it to prove fatal. Had your positions been reversed — had Astin sworn his utter love for Isabella — would you have dashed away to toss your life between the open jaws of a hungry dragonfish?

I might have. Yes. I love him.

And you are weak and foolish?

No — yes — I mean, I don't know. I am weak.

I agree. You are weak with self-pity. You're not the one who's dead, Cassie — it's Isabella. If anyone needs to be pitied, it's her, for her death was without good purpose: it was stupid and senseless. Your life is neither. Save your sorrow for her.

I am. It's for her that —

Excuse me, Cassie. You used to be an excellent liar. What happened? Before this, you could lie to anyone and everyone but never to yourself. Why start now?

But I'm not.

Forgive me for being adamant on this one point: but you are. And before I could squeeze another thought in edgewise, she lifted the shield. Instantly, I clamped my thoughts down cold and turned to go away.

I love you, Cassie, she called after me. *Don't quit me now.*

I knew what she meant. And I knew that she did love me. Suddenly, that alone was the most important thing in the universe.

I said, *I love you too, Mother Jubal.*

Please don't misunderstand. Her conversation did not — it had not been intended to make me feel that all was right and proper with the world. For the next few days, I continued to keep to myself, nursing the wounds of my spirit. But I no longer allowed them to rule me. I wept no more. I was scarred, and though that scar would eventually heal, the mark would remain with me all my life. It would not hurt, but when I saw it gleaming upon my heart, I would remember the pain that had gone with the original wound. They say a person matures when he goes on the pilgrimage — when the secrets of life are revealed to him — yet it seems to me that you can also find out a lot about life simply by living, by being. And that was what I was doing then.

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The dragonfish lurked nearby for more than a week but, eventually exhausting the area, slipped off. Then we were free to resume the normal patterns of our varied lives. Mother Jubal decided not to appoint a replacement for Isabella. Instead, she assigned Astin twelve hours of enclave duty — either working in the fields or tending the young ones — and he could spend the other twelve hours with me the same as before.

Astin did not seem to mourn Isabella's passing. Perhaps he never realized her death was other than a strictly natural tragedy. Only once did he mention her name in those first few days and that was to say that she had not been as good a teacher as me. I thanked him for that and allowed the subject to drop.

Several weeks passed, like most under the waves no different from those which had gone before. The damaged portion of the Shalmar crop was reseeded. No other incidents plagued us. Life was slow, work was dull, and Astin and I talked a great deal.

Once, while drifting, he asked, *Cassie, what's the pilgrimage?* Burdick had just returned, gone nearly a whole month, a pilgrimage of such length that many of us had given him up for reborn.

If I knew, I said, *I wouldn't be here now.*

Mind explaining the riddle?

I meant because there's no way of knowing till you do go. Everyone goes — when they turn sixteen — you will too. Most come back — a few are reborn.

What do you mean? Reborn?

I don't mean anything, I said. *It's what happens when you don't come back.*

Then the pilgrimage is a sort of symbolic journey. A metaphor for gaining maturity.

No. I wasn't being deliberately vague. Among us, the pilgrimage is rarely made a subject of conversation.

Then tell me what is right.

The Godlings live in the Deep, I said. *On the pilgrimage, they instruct us in the mysteries of existence. They reveal the answers of eternity to us.*

Down there?

Yes.

What about the pressure?

The Godlings protect us from that.

And who protects them?

I tried to explain about the Godlings: *They are the original beings who inhabited this world long before the coming of man. They are creators and progenitors. They are immortal and as one with the whole universe. Our souls are given to them for keeping. In return, they reveal the mysteries —*

Are you joking?

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What? I asked.

Up above, every nut on every corner has his own religion. Some have been brough all the way from Old Earth. They have Christ and Buddha and LSD. Others originated on various planets. But all religions have one thing in common: they are practiced for one reason alone: for escape, as a means of avoiding the harsh realities of life. Few of us believe, and those who do are fools.

But the Godlings are real.

How many have you seen, touched, spoken to?

I had to admit none. *But I will. When I'm ready. Ask Burdick. He can tell you. And the elders communicate constantly with the Godlings, receiving advice and guidance.*

They claim they do. I don't know, Cassie. Maybe there is something down there. He indicated the black waters of the Deep. *I'm not denying that. I wouldn't have believed a dragonfish if I hadn't seen it. But I think your elders are using these creatures for reasons of their own: as a means of obtaining what they want from the rest of us: blind obedience and unthinking respect.*

That's not so. When you go, you'll find out, I said, perhaps too smugly.

Then I won't go.

What? I was horrified.

I'll refuse. I've seen the effects of religion above. I didn't come all this way to fall into that old trap.

But it isn't religion. It's real.

I'll tell you what's real, he said. *Isabella being eaten alive by a monster fish. That's real. The food you grow and send above to help perpetrate a system of mass slavery — that's real. I have eyes. Casamassima, and they are all I need in order to tell what is real and what is not.*

But I have eyes too.

Then you must know I'm right. Maybe you aren't aware of it, but you know. So promise me this: promise you'll think about what I've said. For our love.

I promise.

When you're in love, he said, *nothing else in the whole of creation matters but each other. That's where your faith must reside. Not in a god — or Godling — but in the one you love. Sometimes he may do something that you will not immediately understand, but if you love him, then your faith will answer every question for you.*

I understand, I said.

I know you do. He smiled. *And I'm glad.*

The next day was the second worst in my whole life. This was the day I lost Astin. Astin had expressed an interest in seeing a

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sextopus without having a dragonfish at hand to distract from the scene. So we circulated near needle point and eventually succeeded in turning one up. We followed the sextopus at a careful distance, just watching that strange creature with its fluttering tentacles, not speaking, till suddenly I looked around and Astin wasn't there. I said, *Astin?* but around me the ocean lay empty and silent.

Again, I called his name. No answer. Then I shouted, screaming mentally. Then I listened, filled with utter dread. Nothing. Turning, I sped back toward the enclave ready to raise an alarm.

Then I stopped.

I was sure I had heard him. No, that wasn't true. I hadn't heard him, only sensed him, but I was positive he was there, off in the direction of needle point. I said, *Astin,* very softly, holding my mental voice in check so that it would not carry too far. *Astin,* but the ocean was silent.

I thought I knew what he wanted. He had told me only the day before: it was trust. But did I dare give it? He was saying — without words — *Casamassima, stay where you are — let me do what I have to do.* I stayed where I was, wrestling with my conscience. All my life I had been taught the importance of obedience, of loyalty to enclave over loyalty to any one person. If Astin was gone, then Mother Jubal ought to be told. But Astin said, *No.* He said, *Trust me, Casamassima.*

Turning, I swam slowly back to the place where I had lost him. I stayed there. An hour passed, the longest and slowest in the history of the universe, each minute demanding centuries before it would pass. But my decision had been made. I could not turn back now. If I trusted him — loved him — then it was my duty to wait till he returned to me of his own free will.

At last, he came. He rose from below, popping suddenly into my line of sight.

Astin, I cried.

So I made it, he said swimming to me.

But what — where have you been?

I must have got lost.

But I called.

I didn't hear you.

Did you call me?

Yes.

But I didn't hear anything either.

Were you here all the time?

Yes.

The rest of the day, we drifted, discovering another sextopus, following that one, watching it feed, rarely speaking. It wasn't until we headed back to the enclave that Astin again raised the subject of his disappearance.

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Are you going to tell?

I should.

Is it necessary?

Doesn't that depend.

They don't trust me. When that trouble occurred with the Shalmar, they all thought I was the one who did it.

No, they didn't, I said.

It's because I don't accept things the way they do. I ask questions and voice doubts. But you don't feel that way, Cassie. You know I had nothing to do with that.

Of course. Isabella was with you all the time. And — as far as Mother Jubal knew — I had been with Astin today.

You do believe me? he asked.

Yes.

And you won't tell them?

Not if you don't want me to.

Promise.

Yes. All right. I promise.

I love you, Casamassima.

When we arrived at the enclave, the subject that filled everyone's head concerned the sighting of a submarine. At least that was what Burdick claimed it had to be. The others scoffed. The creature sighted was merely a big fish — a strange species. It meant nothing. I let them run on. For myself, I felt it was time to be alone. Inconspicuously, I drifted away.

Was Astin the one? Didn't all the evidence say it was him? And, in truth, hadn't I believed it was so ever since the beginning? Wasn't that why I had become so furious with Burdick for daring to voice my own worst thoughts? Astin had got me to lie for him. Couldn't he easily have done the same with Isabella? Astin believed the Shalmar was used to maintain the system which had exiled him and murdered his friends. To him, that system was the enemy. Would he hesitate to destroy it by any means available?

But did that necessarily mean he had? Couldn't it still, conceivably, be the work of another enclave, stray marauders? or —and this thought just occurred to me — the submarine? Maybe it wasn't Astin — maybe it was the other men — and he had gone to stop them.

But I knew I was only clutching at vague, uncertain possibilities. If only Astin had been willing to confide in me, I could have known for certain, one way or the other. But he had chosen to say nothing — asking me to accept him purely on faith alone — not even asking that — simply telling me I should lie because I loved him.

I thought I had been swimming without reason or purpose, quite lost in a thicket of painful ruminations. For all I cared, I could have been traveling in a single huge endless circle, and it would have been just dandy. But,

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glancing up, I discovered that this was not so:

I had come to the very edge of the Deep.

I nearly laughed at the facile symbolism inherent in this. The brain plays cute tricks when you're not keeping a tight hold on it. But then, looking down, I saw where the apparently solid floor of the seabed suddenly fell away, spilling eternally downward into utter blackness, waters so deep and powerful that they seemed to beckon me down, luring me into an awful death. My mood was shattered. I forgot about Astin. For a moment, I was ready to go down.

But that wasn't necessary. For something was coming up to meet me instead.

I sensed the Godling long before I saw him. He moved with an aura so powerful that it smothered everything else. The waters around me seemed to quiver; the seabed rattled as though shaken by subterranean forces deep within. I shied back, frightened, yet I waited too. A Godling was coming. How could I flee?

It may be sacrilege for me to attempt to describe the physical aspect of a Godling. But, since I do not expect you to believe any of this, I intend to make a stab at it. I only hope your certain skepticism will not carry over into the other portions of my tale. Try this: What I am about to describe is merely a dream, an imaginative figment conjured up by a weary subconscious. You need not believe in its reality. Is that okay?

The Godling was more than a hundred meters in length. His snout was flat, his body angular, almost shaped like a pure rectangle, and his flesh was colored a pale white. I could see a huge cavernous mouth dotted with tiny silver teeth. I could see no evidence of gills. Upon his back was a single fin extending the whole length of his body. The tail was flat, horizontal, thirty meters across. Rising, his pace was slow, dignified; you could tell he was not aware of the meaning of haste.

Soon, the Godling and I rested face to face. Had I wished, I could have glided forward and touched his snout.

We never spoke. Not in words or thoughts or visions. No. We communicated instead through mood, feeling and emotion. What the Godling told me was simple: *Everything will be all right.* No — do not misunderstand — not that everything was all right, for I sensed the deep meaningless of the present moment in relation to the entirety of time as known to this being. His vision lay deeply in the future, in distant centuries I would never conceivably know. Everything would be all right — yes — for his

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vision showed the continuation of the known universe, stars shining, creatures living, dying, living again, dying again, progressing in ever enlarging circles of time. And, in the vision of this being, whose sight extended not only into the future but equally as distant into the past, when the universe was nothing — darkness was everything — when life was unknown and unguessable — the present moment for me as well took on a deep insignificance, like a single grain of sand buried deep within the ocean floor. And yet I further sensed that it was meant for me to live in the present and that this gift of time could not be forsaken. He was the Godling; I was the man. Each of us had been granted a certain knowledge, and neither could pass over into the awareness of the other. Yes, the message I received there on the brink of eternity was certain. How long did I listen? How many seconds, minutes, hours, days, years, decades, centuries, eons? I cannot tell you. When I returned to the enclave, I was told I had been gone less than an hour. But that was their time; it was not mine — or his.

The Godling left as he had come, drifting down. Though his physical presence was gone, the spiritual gift he had brought would remain forever mine. His message was bare: the universe will endure. To me, then, that was sufficient. The purest secret of existence had been revealed to me. Soon, in hours, I shall depart upon my sacred pilgrimage. Then I will learn even more. Dismiss what I say as fantasy or dream; my own knowledge is secure. I have told no one of my meeting with the Godling. It is my secret. I know. If others do not — or will not — that is their chosen curse.

I reached the enclave and was greeted by a flurry of action. A dragonfish had been sighted nearby — I had surely missed seeing it only through good luck — and this material menace had been sufficient to drive away any lingering anxiety caused by the less substantial submarine. Only Burdick still wished to consider the latter problem, but he was shushed into silence. The known is always more dreadful than the unknown.

Seeing me, Mother Jubal suddenly whirled.

Cassie, where have you been?

I went away.

Didn't you hear the alarm?

No.

Where were you?

Just drifting.

Why? She was angry — I had never felt such uncontrolled emotion from her — and afraid too.

But I would not tell her the truth. *I felt like being alone.*

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And where is he?

Who?

Astin.

Oh. I haven't seen him.

He hasn't been with you?

No, I left him here.

He's gone.

Oh.

It was your duty to watch him. I trusted you, so I can tell you this now: if anything happens because of this, you will be banished from this enclave. Her anger had not diminished. I got mad too. I tried to say a vote would have to be taken, but she turned away and announced the names of the dragonfish watchers.

Finally, turning back, she said, *Get out of here, Cassie.*

I went, my mind in a horrible whirl. The Shalmar fields stretched beneath me. At least she could have warned me about the dragonfish. I wondered, was she so mad at me it didn't matter to her whether I lived or died?

I never had to answer that question. I had gone only a short distance when I discovered Astin. I spied him far below, catching a faint glimpse of a familiar tail swishing between two tall Shalmar plants. He was way down inside the fields. Shielding my thoughts, my feelings torn between curiosity and anxiety, I dropped down, reaching a point where I could observe without being seen. I watched him. From all I could tell, he was simply digging in the soft ground with his beak. He wasn't harming the crop. If anything, it looked as if he were planting seed.

Astin.

He whirled as if bitten. *Cassie. What are you doing here?*

He rose to meet me. *Why, nothing. I was just seeing how it's done. All of this is new to me. We don't have many farms up above.*

You didn't hear the alarm?

No — what?

Another dragonfish. Didn't you notice the excitement?

Yes, and I looked for you. None of them would tell me anything coherent. So I decided to wait till you showed up.

Here?

Where else? Did you hear about the submarine?

I — yes.

What do you think it means?

I haven't the slightest idea.

At first I thought — hoped — it might be someone else come to join me. I could use some extra company down here. But the others — particularly that one — seemed to feel I was to blame for it being here.

That was just Burdick, I said, leading him toward Mother Jubal. I found her swimming with the elders. When I tried to signal, she ignored me. Clearly, the elders were holding a private session. I made

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sure she noticed Astin, then headed off.

Let's work for a while, I suggested.

He agreed, adding that he loved me still.

We had been working only a short time when it happened. At first, the seabed merely shook and trembled. I thought it might be a quake. Turning, I looked ahead just in time to see a huge portion of the seafloor rising upward as though a giant hand had been thrust up from below, spilling mud, dirt, weed and shalmar high toward the distant surface. For a long moment, in utter silence, I regarded this sight.

Then the shock wave hit. I can describe it only by saying it was like being run over by a herd of dragonfish. Up and down became meaningless terms. I floated in the water; I bounced, fell, turned and twisted. I was slammed against the seabottom, tossed up, slammed down again. My body felt as though it were being torn apart from the inside. I knew I was screaming, but everyone else was screaming too; my mind was filled with shrill, desperate cries, like ghosts wailing at the light. I felt their pain clearly; it buried my own.

Then, abruptly, there was silence. The pain went on. I erected a shield against that. I did not move.

I saw ahead. Between wavering shreds of broken Shalmar, swirling eddies of dank mud coursed and ran.

No one move, said a stern voice. It was Grandmother. *No one speak.*

I didn't want to speak; seeing was quite enough. I knew now it had not been a quake, for natural disasters are never specific or selective — they do not discriminate in their destruction.

I knew the words which explained what had happened. I did not need to speak them either — upper words — yours words: explosives, dynamite. A huge crater had been carved in one corner of the fields. Nothing lived there. Most of the rest of the Shalmar crop had been torn and battered; only the dying lived there.

Grandmother was naming the names:

Ernest?

Here.

Vivian?

Here.

Felda?

A vague, painful whisper of life.

Casamassima?

Here.

Burdick?

Silence.

Astin?

Silence.

The sound of his name brought me back. Of them all, only I knew where to find him now. Unseen and

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unmourned, I snuck away. I was alive, beneath notice; it was the dead who ruled now.

I swam straight for needle point. I did not weep. Burdick was dead, and how many others: But I was strong, stoic, as firm as any rock. My heart beat coldly. My lips were tense, my beak clamped as tight as a clam's shell. I knew where I was going. I knew why.

Opening my mind as I approached, I sought to read his. What did I find? Fear — yes — that was surely there — and anger too. But what surprised me most was a strange touch of genuine remorse. I had expected more from Astin.

I called him: *Astin?*

Oh. Cassie?

I thought you'd be here. I approached no closer than ten meters. It wasn't fear that made me keep my distance; it might have been shame.

I was hoping you'd come.

Why?

I wanted to see you.

I won't try to stop you. Is it coming yet? The water — even here — had been turned dark and murky by the explosion. Mud covered everything like dank paint. If the submarine was coming, I could not see it. *Where will it take you?* I asked. *Another enclave. There's no other place.*

What are you talking about?

You don't have to lie, I said. *I lied for you, but I never lied to you. Why did you do it?*

You know why it was done. I'm sorry.

You are?

I did love you, you know.

And you don't now?

That's what's sad — I do.

Then you should have tried to understand me — us.

But I did.

Then you failed.

Maybe so, he said, peering deeply into the dark waters. We had returned to the old language — the same as when we'd first met; neither of us wished to be misunderstood now. But I couldn't make up my mind. Did he want the submarine to come now and save him from me? Or did he fear its approach because, once and for all, his lies would be clearly exposed? *Maybe I lived up there too long.*

And now you can't live down here. Grandmother will contact the other enclaves. They, in turn, will contact still more. An hour from now, if you appear near any enclave, you will be killed.

But that's murder.

They'll do it, I said weakly.

I don't care. Like me, he was full of courage. *I've died before.*

I turned away.

Casamassima, he called.

Yes?

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Where are you going now?

Oh, away, I answered. *Far, far away. There are things I want to see and do. That's all.*

I'm sorry, he said again. But I was already gone.

I found the dragonfish with practiced ease; my technique was really quite simple. I merely waited till I detected a huge mass of small fish streaking past me, then turned and followed their trail to its natural end.

The dragonfish swam before me.

It was huge. I don't think I have ever seen one to rival this particular beast in sheer vastness; in its own way, the dragonfish was as grand as the Godling himself. Sharp teeth gleamed brightly; the mouth was a hollow cavern. Grimly, I moved forward.

In the stories we tell beneath the waves — those myths and legends so purely a part of the early years — the heroes, when they die — as usually they must — burn with last words — final thoughts and phrases — always worth recording for youthful posterity. I had no such thoughts to articulate. I recalled Isabella and marveled at how truly brave she had been, doing what I was doing now and yet doing it first. She was the leader; I merely copied her perfect example. I swam calmly ahead. The dragonfish turned in a majestic circle. Its eyes never left mine, but it did not attack; I belonged to it already — there was no need. I knew how awful it must be, being so huge that your entire existence is devoted to the simple gathering and consumption of enough food so as to go on living — enduring only for the sake of enduring. But, I thought, isn't that the same with all of us? Why else do we go on except to be able to go on?

Having come as close to genuine profundity as was my due, my last thoughts had run dry. I shut my eyes, clamped a shield around my mind and drifted — glided — toward that waiting black cavern.

Then I sensed another presence and my eyes flew open. I felt the dragonfish's angry wail. It was Astin. He swooped silently past me, moving quicker than I'd known he could. He headed straight toward the dragonfish.

And the dragonfish, of course, went after him. At the very last moment, when the two of them were so close they could have touched lips, Astin sprang to one side. The dragonfish's jaws snapped viciously down — but only on water, emptiness. Astin was already streaking away.

Wait — come back, I shouted, feeling instantly stupid. The dragonfish steadfastly ignored me. A challenge had been hurled; the

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beast was not one to ignore the difficult in favor of the easy. As the easy, I was left alone. The dragonfish sped after Astin; the chase was on.

Around me, the water shook as the grim pursuit continued. Each time the dragonfish appeared to have Astin safely cornered, Astin performed some fantastic maneuver — nothing short of miraculous — and escaped yet again. My mind burned with the dragonfish's bitter frustration. I nearly laughed myself. From Astin, I received nothing. He swam as if dead already, and soon, I knew, inexorably, he would be dead in truth.

Each time he sprang away he drew the dragonfish farther from me. I made no attempt to follow. It was as if having been once spared from a death rightly my own, I now had no heart to rush forward and demand a second hearing upon the spot. I could wait. Life is long.

Astin and the dragonfish swept toward the jagged face of a cliff thrusting abruptly out of the seabed. Here, I knew, the end would surely come. I watched almost unmoved by the distant spectacle. Astin was a pale dot; the dragonfish was a huge blot. They met near the cliff. The two came together, merging. It took me a moment to realize what I had seen: Astin was dead.

Now, at last, I was able to weep. As always, my tears tore brutally at my insides, finding no way of escaping, and I cursed the stupidity of our creator for placing us in a world where that most natural of human acts is rendered absurd. The dragonfish was speeding my way. I paid him no mind. I was allowing life to run its fateful course.

Life went black. A shield fell around my mind. I felt my body moving back, up, away, streaking through the water at a speed beyond that meant for any mortal being. It was too much for me. Blackness took control. I passed out. Easily, I slipped into the warmth of blissful oblivion. I guess I must have slept.

I awoke with Mother Jubal's kind face dangling above me, the round black eyes, the snout with its yellow beak, the creases and wrinkles in the pale gray flesh.

Decided to join us, Cassie? She added a warm smile.

I struggled to match her example, but I was still too beat. Instead, I took a look around. I saw the enclave, the caves, the ravaged fields, the huge hole torn in the floor of the sea. This last sight brought everything rushing back to me; suddenly, I had more memories than I would ever need.

You saved me, I said.

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Me? No.

Then who pulled me out of there?

That was me. But I only helped you. It was Astin who saved you.

Why? I asked.

That is something you'll have to answer for yourself. You'd know better than any of us.

Because he loved me?

If that explanation makes sense to you, then it may well be the right one.

It makes sense.

Then use it. A shield had been erected around our thoughts. Nearby, the sea was filled with those forced to remain above the enclave because of the dragonfish. That recollection caused me to shiver. Then I remembered Astin and I could have been sick.

Then he wasn't the one, I said.

The one who destroyed the Shalmar?

Yes.

No, that wasn't him.

It was those others — the uppers in the submarine.

Yes.

Will they be back?

No. She did not need to explain.

But Astin must have known.

Yes, she answered. *Obviously, he was the one who brought them here. They were his friends originally — fellow rebels. The first time, maybe he helped them. Isabella could have told us, but she chose to die in silence. But he must have changed his mind. That last time, he was trying to get them to go away. I don't think he would have succeeded. They were as determined as he once had been. But he did try. He tried before the explosion too — the time he left you alone — but they lied to him and then went ahead and planted their explosives.*

You let them?

We were wrong. We did not interfere until it was too late. We were unaware they possessed a weapon so powerful. We — the elders — are to blame for those deaths.

But Astin didn't deny it.

If he had, would you have believed him?

I guess not, I answered.

Then he was smarter than you.

And I guess that's the end of my story, the saddest, I promised, ever told, and if it isn't quite that — and hearing my own voice and trying to interpret the story objectively, I guess I may have exaggerated a trifle — at least you must admit that it is genuinely sad. It even has a tragic heroine. I ought to know — that heroine is me.

I say it's the end of the story even though it doesn't bring us right up to the present moment. Many additional weeks have passed. For a time, I slaved in the

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fields — laboring strenuously, with honest diligence — and soon my probation was revoked and I was allowed to return to the surface, where I met you — my dear — and our relationship — benevolent but clandestine — commenced. And now it is nearly at an end. I hope you realize I am weeping internal tears for you the same as I did for Astin. And I also hope my story has not bored you excessively and that you haven't minded being put through such emotional turmoil even at second-hand.

My last hope is that you don't think I'm idiot enough not to have known Mother Jubal was lying through her beautiful brain waves that last time we talked. Were you intending to tell me that? No need. She lied to preserve my innocence, which had long ago been lost — when I met the Godling, I'd like to think — so I, in turn, lied to protect hers.

Astin was dead long before his carcass came streaking to my rescue. He never swam like that in his life and never would. How did he die? I still don't know for sure. Maybe the elders killed him the same as they did the men in the submarine. I hope not. I've seen the others' bodies, and it was not a pleasant sight. But perhaps so: the elders had permitted Astin to survive, knowing what they did — which, clearly, was everything — because of our basic creed that every conscious being should be allowed to work out the ways and means of his own life without outside interference. And if you think that's soft or stupid — as I often have — I can only answer with one blunt fact: we are alive, we have survived, and we are free.

And yet it may well be that direct and cold-blooded murder was still not enough to place Astin on the wrong side of an invisible line, and he was spared. They would surely have banished him, but I don't think they would have killed him. The fact that — afterward — an honorary death-feast was held for Astin's soul (nothing of his body having been rescued from the dragonfish) lends credence to this supposition. My own best guess is that Astin was killed by the men in the submarine; they had realized his future uselessness to their cause. What I do know is that they, in turn, were slain by the elders and that Astin's body was put to use in saving me from the jaws of the dragonfish. For that, I will forever be humble. It means that the elders felt I was someone worth saving. They had allowed Isabella to die — but not me. As I said, I am proud.

But it was Astin who destroyed the crop, and it was Astin who planted the explosives. There was one big hole in Mother Jubal's kind

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fantasy: the men in the submarine could never have operated outside their craft. If the pressure didn't kill them, their own fear would. Everyone knows an upper cannot so much as dip his foot in the ocean without suffering a sudden outbreak of cowardice. In a way, evolution has played fair. You will seldom find a merperson clomping around up on the surface either.

So now I'm off. It's pilgrimage time. My friend the Godling waits to renew our acquaintanceship. I hope you'll wish me well. I am sad that we shall never see (or hear) each other again. But my time has rightly dawned. It's just as well. I think I've run out of words. I'm tired. I bet you are too. By the time I return from the Deep, all my illusions may well be quantities of the dark past. They say that's one result of enlightenment. I don't know. I have a feeling that may be just another illusion.

So — well — who knows?

I'll be finding out soon enough.

Till forever: Bye.

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Once upon a time, when the world was younger than it is today, speculative fantasy was a microcosm sufficient unto itself. Nobody outside its narrow borders noticed it or cared what happened to it. Sf was a literature confined to a handful of pulp paper magazines. An editor of a professional sf magazine could be 19. The attendance at a World Science Fiction Convention — so grandly named — could be one or two hundred people. Though there might be some argument as to what sf was, and further hairsplitting about the exact differences between science fiction and fantasy, these arguments could be settled by pointing.

Those times have passed now. Sf is changing and growing, and pointing no longer is sufficient to settle arguments as to its nature and purpose. There are quarters in which sf is taken as an oracle, a guide to *Future Shock* or *The Morning of the Magicians.* We are pushed forward as prophets. There is a more general feeling that sf has an importance for the times, though what that importance is, or should be, is hard for anyone to say.

When an editor like John Campbell or an author like J.R.R. Tolkien dies, the fact is noted in the *New York Times.* The attendance

ALEXEI and CORI PANSHIN

Books

H.G. Wells: Critic of Progress, by Jack Williamson, Mirage Press, 162 p., $5.95

Isaac Asimov: A Checklist, by Marjorie M. Miller, Kent State U. Press, 96 p., $4.50

Three Faces of Science Fiction, by Robert A.W. Lowndes, NESFA Press, 96 p., $5.95

From Elfland to Poughkeepsie, by Ursula K. Le Guin, Pendragon Press, 31 p., $3-$5

The Science-Fiction Magazine Checklist 1961-1972, ed. by William H. Desmond, Archival Press, unpaged, no price

The N.E.S.F.A. Index 1971-1972, NESFA Press, 42 p., $3

The World of Fanzines: A Special Form of Communication, by Fredric Wertham, M.D., Southern Ill. U. Press, 144 p., $10

Science Fiction, Today and Tomorrow, ed. by Reginald Bretnor, Harper and Row, 339 p., $8.95

Billion Year Spree: The True History of Science Fiction, by Brian Aldiss, Doubleday, 339 p., $7.95

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at science fiction conventions may number in the thousands, and the number of science fiction conventions grows yearly. Sf is a respectably large publishing category, and the only type of fiction whose audience is consistently growing. Writers like Leslie Fiedler and John Fowles announce themselves at work on science fiction novels. The number of courses in sf in the schools and universities of the nation is now 500 at a minimum.

For those who grew up with sf, this is a moment long hoped for. As sf is serious and respectable, so are we, at long last. But the moment is not a completely happy one. Important questions are being raised by sf's success that demand answer.

Sf conventions have now reached an unwieldy size. There is a loss of the old happy intimacy. Amateurs find it more and more difficult to put on conventions, but what is to happen if they fall into the hands of professionals?

Once science fiction provided a living for almost no one except a few publisheres, who made their money by not paying their contributors. Today, sf is an industry, and people make money out of every bit of the pig, including the squeal. There are editors, writers, tv and movie producers, academics, anthologists, book dealers, hotel-keepers, psychiatrists, hucksters of *Star Trek* marginalia, and magazine and paperback thieves who market publications with their covers torn off at cut-rate prices. Not to mention book reviewers. All of these have their own interests, their own angles, their own profits to make. Some love speculative fantasy. Some couldn't care less, except for immediate profit or advancement.

There are even editors and publishers of fan magazines, once purely amateur, who now make vacation money or better out of their news-sheets or critical journals. Some of these now even pay their contributors.

Is the pleasant happy insular sf microcosm to be ended by problems of size and questions of money? Are the amateur Hugo Awards going to be mired in ugly questions of shamateurism? Is sf going to be strip-mined by hustlers, careerists and profiteers?

Some of these questions may be beyond ready answer, but they are all going to have to be confronted soon. They ought to be thought about.

The changes in sf are reflected in the publications that we have on hand for review this month. One of the changes is in the very fact of these publications. Gone are the days when books of speculative

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fantasy were rare, and books about sf were nonexistent. For some twenty-five years, books of sf bibliography and criticism have been issued at the rate of one or two a year. But now change is upon us. All our publications this month are concerned with one facet or another of sf, and many more such are promised for the near future. We are going to content ourselves with only a bare few words about most of these items, pointing out how they illustrate the new times in sf — and mention a few more books to come — so that we can concentrate on one book in particular, Brian Aldiss's *Billion Year Spree: The True History of Science Fiction.*

Jack Williamson is a measure of both the changes of the twentieth century and the course of modern science fiction. Williamson was born in 1908, and as a young boy, in 1915, he and his family moved in a covered wagon from Texas to New Mexico. Williamson is the longest-active science fiction writer still at work. His first story, "The Metal Man," was published by Hugo Gernsback in the December 1928 issue of *Amazing Stories,* and he had a novel, *The Moon Children,* serialized in *Galaxy* in 1971. Williamson received his Ph.D. in English in 1964 and now teaches science fiction at Eastern New Mexico University.

H. G. Wells: Critic in Progress was Williamson's thesis for his doctorate. We had images of Jack reading Wells as he sat on the tailgate of that covered wagon, but no, it seems that he first encountered Wells in the pages of the early *Amazing.* This book is honest homage from an early master of science fiction to an earlier writer whom Williamson feels has not yet been surpassed. Take into account, however, the fact that it began as a thesis.

Marjorie M. Miller's *Isaac Asimov: A Checklist of Works Published in the United States, March 1939-May 1972* is a hardcover bibliography of the written works of the Good Doctor. It is testimony of Asimov's industry and of the new legitimacy in academic circles of People Like Us.

Three Faces of Science Fiction by Robert A.W. Lowndes, is an example of a new type of sf publication, the convention souvenir. This modest little book began life as a series of editorials in *Famous Science Fiction* in 1967 and 1968. Like *The Universe Makers* by Donald Wollheim, to whom this book is dedicated, it may be counted as an *apologia pro vita sua* by one who was a young sf fan in the Thirties and a young sf editor in the Forties. *Three Faces of*

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Science Fiction is genial, unrigorous and unpretentious, but it is unlikely to add to anyone's understanding of science fiction. It is also over-priced.

If the last item is over-priced, *From Elfland to Poughkeepsie* by Ursula K. Le Guin is a rip-off. This neatly-made pamphlet is a writers' workshop address that in former times would have been published as a commonplace fan magazine article. Its thesis is that the diction of fantasy stories should be appropriate. Agreed. But why $3 for a thirty-page pamphlet, and $5 for an autographed copy? Seemingly that is what the publishers feel the traffic will bear. Be warned.

The Science-Fiction Magazine Checklist 1961-1972, ed. by William H. Desmond, and *The N.E.S.F.A. Index: Science Fiction Magazines and Original Anthologies 1971-1972* are attempts to keep bibliographic control of sf. The *Checklist* gives the dates of volume and issue numbers of sf magazines. Desmond intends to expand coverage to the years 1895-1975 and publish a complete checklist in September 1976. He asks for suggestions, completions and corrections to be sent to him c/o Archival Press, P.O. Box 27, Dept. SFC, MIT Branch Station, Cambridge, MA 02139. The NESFA index is a continuation of previous magazine indexes, giving listing by contents, by story title and by author. It adds coverage of original sf anthologies, token of the shift in sf publishing from magazines to books.

The World of Fanzines: A Special Form of Communication by Fredric Wertham, M.D. is an example of notice from the outside world. Wertham is the author of *Seduction of the Innocent*, the book that was responsible for the laundering of the comic book industry some twenty years ago, and there were those who feared that Wertham might dislike fanzines. Indeed he does not. He likes them a lot. He finds them healthy and creative, and we dare say that he is right.

The fact remains that Wertham does not know or understand fanzines. He looks at them as a complete outsider, and his study reveals the limitations of "objective study." To do a proper job would require someone who knows how fanzines are made, and why, and what the problems of making them are. But it might be better that such a study not be made and perhaps prove the death of its object of love. Let well enough be, and hope that *The World of Fanzines* is overlooked so that those who create fanzines may be left in peace.

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Twenty years ago, Reginald Bretnor edited one of the early volumes of science fiction criticism, a symposium entitled *Modern Science Fiction: Its Meaning and Its Future.* Now he is issuing another collection of fifteen articles, *Science Fiction, Today and Tomorrow.* The chief difference that twenty years have made seems to be that the earlier volume was primarily concerned with explaining sf and justifying its existence, whereas the present book is more secure in its belief that sf has its own legitimacy. The contributors to the present volume are primarily concerned with the uncertain state of the world and how sf may affect it. Some few articles here, like Poul Anderson's "The Creation of Imaginary Worlds," may be of particular interest to those who read science fiction, but for the most part, this book seems directed more to those who don't read science fiction than to those who do. And, perhaps because these are uncertain times, the sum and substance of these many articles seems ultimately inconclusive.

The most interesting item that we have for review is Brian W. Aldiss's *Billion Year Spree,* which is subtitled *The True History of Science Fiction,* and is, as Aldiss points out in his introduction, the first book-length history of sf. It seems incredible that it should be, but quite amazingly, it is. It is a timely book, and so is its intention of putting sf in perspective timely.

Close observers of this space may have noticed that on several occasions in the past year or two we have taken exception to anthologies edited by Brian Aldiss. Because of this, and because we are at work on our own history of science fiction, well-meaning mutual friends of ours and Aldiss have suggested that it might be better if we didn't review *Billion Year Spree* lest our remarks be misunderstood.

However, it seems to us that if sf truly is to be put in perspective, then perhaps *Billion Year Spree* is a book we should go out of our way to comment on. Sf needs to be understood. Various theories as to its nature and purpose are going to be offered now and in the near future. They are going to contend for influence on the future course of sf. Under these circumstances, the most direct commentary by us on Aldiss or Aldiss on us seems in order. The less misplaced hanging-back the better. Let us argue like friends.

First, the book itself. *Billion Year Spree* was apparently originally to be a collaboration between Aldiss and Philip Strick. Aldiss's part was to have been the 19th century, and Strick's the modern

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history of sf, but Strick dropped out of the project because of other commitments and Aldiss finished the whole history himself. The result is that the 19th century chapters are the stronger part of the book. They give an account of many works that will be unfamiliar to modern readers of sf and they touch on all of the works that deserve commentary. The chapters on the 20th century are more perfunctory, and too often they take refuse in alphabetical catalogs like this (excerpt):

"Daniel Keyes' *Flowers for Algernon* was immediately hailed (and later filmed as *Charly*). Damon Knight, now too well known as critic and anthologist, was once a spirited and elegant short-story writer. Fritz Leiber, most celebrated for his fantasies set in imaginary worlds, was also capable of producing short sf as stunning as "A Pail of Air." J.T. McIntosh began with great promise in such novels as *One in Three Hundred.*" Etc., etc. This is either too much about these writers or it is surely too little.

The other chief weakness of the book is that it has no consistent narrative thread. In spite of its subtitle, it is not a coherent history. It is not a systematic account of what has happened in the development of science fiction, together with an analysis and explanation. Instead, it is a random grouping of books and authors, together with Aldiss's often strikingly insightful comments upon them. But a history it isn't.

What, then, is Aldiss writing, and why?

It seems to us that there are two Brian Aldisses. One is a person who received a good conventional high British education, and who accepted its values without question, in particular the prejudice that to be negative is to be more realistic and truthful about the universe than to be positive. The other is the boy who discovered science fiction around 1940, loved it wholeheartedly, and rebelled when he was told that it was trash.

The Aldiss who grew up to write science fiction attempted to make a consistency of his two selves. That is, he tried to write science fiction, which he valued, according to the standards of good literature that he had been taught and believed. The result has been stories of devolution like the Hothouse series. It has been novels modeled on James Joyce and the French anti-novelists. It has been stories with titles like "...And the Stagnation of the Heart". *Billion Year Spree* is Aldiss's attempt — ten years in the making, by his own account — to make an intellectual case for the virtues of his particular synthesis.

Aldiss offers this construction

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of science fiction: "Science fiction is the search for a definition of man and his status in the universe which will stand in our advanced but confused state of knowledge (science), and is characteristically cast in the Gothic or post-Gothic mould."

It is the Aldiss who loved science fiction who offers this definition. But the other Aldiss has a mandarin certitude about the nature of man and his status in the universe that cuts the search short.

It is this Aldiss who writes: "The evil that confronts the Poeian protagonist is not simply external; it is a part of his destiny, if not of himself. This is not an untruthful view of reality — later science fiction authors who change the terms of Poe's equation, making the protagonists gigantic and heroic, and conquering the universe, or making the evil purely external — and so cast in opposition to an innocent mankind — falsify disastrously."

It is this Aldiss who writes of the novels of Franz Kafka: "And yet the baffling atmosphere, the paranoid complexities, the alien motives of others, make the novels a sort of *haute* sf."

And it is this Aldiss who baffles himself in this manner: "Terms such as 'pessimism' and 'optimism' are loosely used in the science fiction debate. There was plenty of pessimism in *Astounding;* that is a simple emotion. What it lacked was a natural and decent despair which has always characterized much of ordinary literature. But, even in 1972, editors in the sf field reject stories because they are 'too down-beat' — a curious rejection, since sf has always been, on the whole, a gloomy literature."

If the nature of man and his status in the universe is still in question, then it is not yet time to declare ourselves for "a natural and decent despair." Indeed, this despair does characterize ordinary mimetic literature. If sf does not despair, it is because it has horizons that mimetic literature lacks.

Aldiss concludes *Billion Year Spree* by postulating "that the sf field will undergo — is already undergoing — the same stratification already undergone in the general category, with high-brow novels and low-brow novels and several brows in between." And he aims to increase this stratification: "Sooner or later, the Prix Goncourts of the field will arrive, to be bestowed for works of genuine creation. We hope that the new John W. Campbell Memorial Award will be a step towards this end."

The John W. Campbell Memorial Award is the first political prize to be offered in science fiction. Its politics are Brian Aldiss's politics.

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In presenting the first award of the prize, Aldiss's statement reads, in part: "Until SF is allowed to be aware of corruption, and the fallen state of man on which most of the world's great writers have dwelt, then it will remain a nursery literature, as it largely has in even the best of the SF magazines."

Aldiss is certainly entitled to his own opinions. But it was an outright mistake to use John W. Campbell's name to further politics that he would have despised. It would have been more honest to name the award after Franz Kafka, or even after Brian Aldiss.

Brian Aldiss seems to hope and believe that his values will prevail, that science fiction will divide itself into a higher part and a lower part, and that the higher part will look very much like the kind of science fiction that Brian himself writes. But it is our belief that if Brian Aldiss pushes the distinction that he makes in the *Billion Year Spree* and in the John W. Campbell Memorial Award, if he persists in perceiving the nature of man as fallen and man's status as deserving nothing but despair, his will not be the high standard by which science fiction measures itself. Instead, he will separate himself from science fiction as J.G. Ballard before him has done.

Things to Come: even more books on science fiction. In particular, look for J.B. Post's *An Atlas of Fantasy* (Mirage Press); James Gunn's *Alternate Worlds* (Prentice-Hall); and the first volume of the Third Edition of Donald H. Tuck's *A Handbook of Science Fiction and Fantasy* (Advent). The atlas is a generous collection of maps of imaginary countries assembled by a fan who is a map librarian at the Philadelphia Free Library. James Gunn's book is an illustrated history of science fiction, by report a large table book with the names and numbers of all the players of sf. Tuck's *Handbook* is quite simply the basic reference book of science fiction, the last edition of which was issued in 1959. All are due Soon.

JACK VANCE will be in F&SF's 25th Anniversary Issue - October 1974

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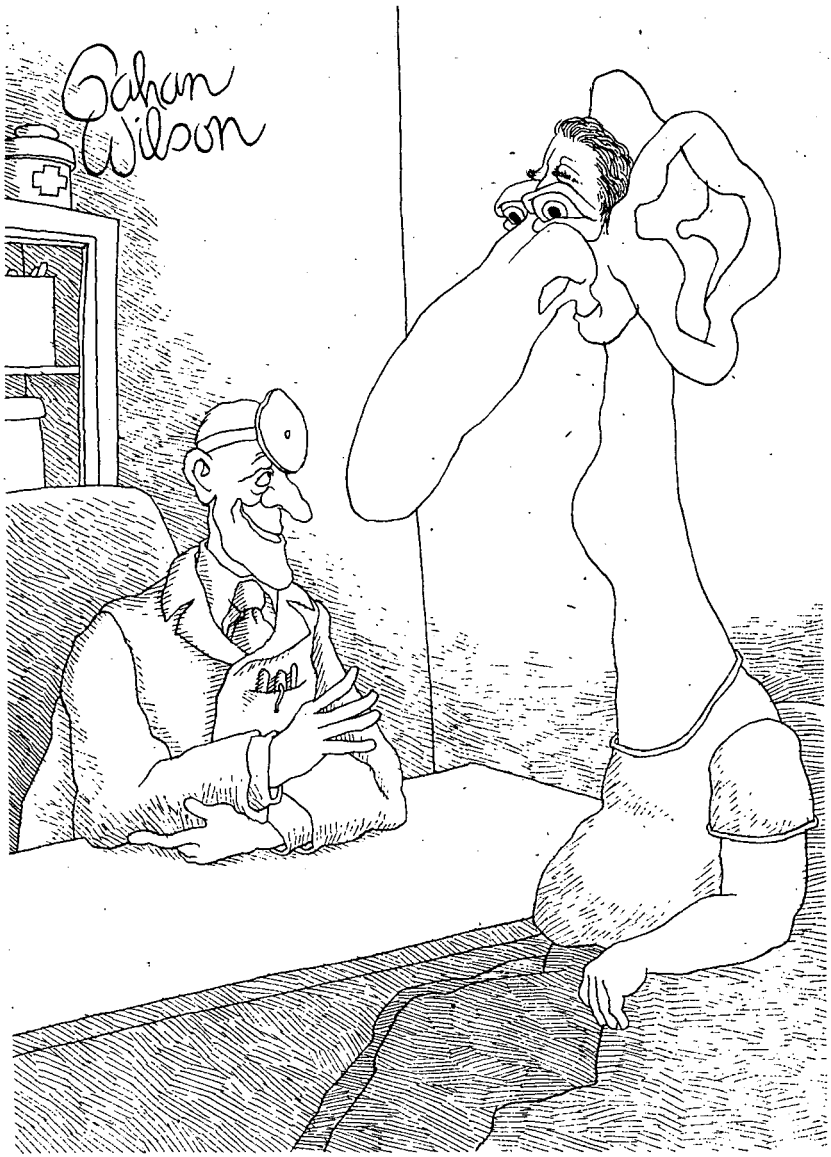

"Take it from me, Mr. Kirby — you're an eye, ear and throat man's dream."

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Gary Wolf is an industrial advertising writer who reports: "I started reading sf at age 8 and have been hooked ever since." He began writing science fiction several years ago and has sold stories to *Galaxy* and ORBIT.

Slammer

by GARY K. WOLF

While Samuel lay unconscious on the sidewalk, the policeman who'd sapped him read him his rights.

He woke up face-down amid a pile of garbage in an alley alongside a dingy bar called Harry's Rock Pile.

"You O.K.?" A woman's voice, long slurred vowels and husky. Dark.

He peeked up at her. Mercy! Such an obscenely short tight skirt. Obviously, as his Momma would phrase it, an haitch you hess hess why.

"I asked you if you was O.K."

"No, I'm not O.K." he snapped, gingerly cradling his head. "My God, people *die* from this kind of thing."

She knelt down beside him and felt at the lump behind his ear. "You just got a bump. You be all right." She raised him to a sitting position. "You new? First time Peaches see you around." She eased him up to his feet. "You look so classy. Lemme guess. I bet you a paperhanger. A satchel man. Or maybe," she winked, "you a high-class, uptown dip."

It all went right over his head. Such strange mumbo jumbo, thought Samuel. She must be of foreign extraction. To insure that she understood him, he addressed her loudly and distinctly, with crisp enunciation. "Could I prevail upon you to call me a cab?"

"Cab? Man, where you think you are? Ain't no cab ever come in here. And why you talkin' so loud?"

"The police, then. Could you direct me to the nearest police station?"

"Po-lease? Maybe I take another look at your head."

He drew back as she approached, his stereotypes surfacing

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in visions of bloodthirsty natives, boiling pots, and Samuel a la mode. "Don't touch me."

She backed off, her face all compressed with compassion. "Honey, you need a drink."

What would persuade her to leave him alone? Of course. Money. He reached for his wallet. But it was gone. And so, come to think of it, were his Rolex Oyster and the sapphire pinkie ring inscribed "to my dumpling" that Momma had bought for him in Miami Beach. "My God, I've been robbed!"

"No problem," said the girl, misunderstanding. "Harry, he carry you till you can score."

Samuel, his whole perspective spinning, wanted desperately to walk off and find help, but his feet refused to co-operate.

"Hey, I better get you inside," worried Peaches. "You weaving around pretty bad."

"Perhaps I do need something mild," Samuel mumbled blankly, letting her stumble him inside the tavern. "To settle my stomach."

"Champagne cocktail," ordered Peaches. Harry narrowed his eyes, cocked his head. "It's on the man, Harry, it's on the man."

"That right, buddy?" Harry turned to Samuel.

"Yes, certainly. Give Miss Peaches whatever she wants, and I'll pay for it. That is, if you'll let me run a tab. Until I can...score." When in Rome, as Momma says, speak Roman.

Harry nodded. "What's yours?"

Samuel ran his finger up and down the side of his nose. "Perhaps an aperitif. Have you any ouzo?"

"How's that again?"

"Ouzo. Or schnapps. Some Metaxa?"

"Buster, this ain't the bar at the Ritz." Harry held up his hands, fingers extended. "Hard stuff, I got bourbon, whiskey, rye." Tick, tick, tick. "And mixes, I got orange juice, tabasco, and Worcestershire sauce. Understand?" He made two fists. "Pick one from each hand, and don't be such a smartass."

"Bourbon and orange."

"That I got."

Peaches pulled him over to a corner booth, and they both sat down.

Holding his nose, Samuel tossed down his drink.

"That's quite a jacket you got on there, hon," said Peaches rubbing up against him.

He edged away. "Thank you." Lemon yellow, it had a world map woven into it. Tiny red dots marked all the places he and Momma had vacationed together. She'd had a Saville Row tailor make it up for him, special.

"I never knew nobody been so many places. Show me where all you been."

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"The Virgin Islands." On the left elbow. "Europe." On the collar. "And the Poconos. Several times." He pulled his flap around so she could see it.

"Where's that?" she asked pointing to a small dot in the middle of the Atlantic Ocean.

"Oh, that," he chuckled, his headache remarkably diminished. "That's some *cacciatore* I spilled on myself in Venice. I'll never forget that meal. Momma kept telling me. Clean off your plate. I said, but all I've got left are chicken bones. And she said, here you are. You see with your own eyes all the children starving in Europe, and you won't clean your plate. You should eat and be grateful. I remember, she was having *fegato ala veneziana*. And the wine was, let me see, now, yes, a delightful little...."

"Did you?" Peaches interrupted.

"Did I what?"

"Did you eat them chicken bones?"

"Why, certainly I ate them. When Momma says to...." He pulled his coat around himself protectively. "You'll have to excuse me. I really must be going. Where's the nearest subway?"

Her eyes scrunched up, she shrugged her shoulders. "Ain't no subways here."

"A phone, then."

"No." She shook her head. "Man, you really tense. Relax. You like it in here. You want to pull off a heist, you want to turn a trick, you want to blow grass, you do it. Cops don't hassle you. Not in here." She rubbed his inner thigh.

Again, he scooted away. "That must be terribly reassuring. If one is criminally inclined, that is."

She stroked his hand with hers. "Don't you worry, hon. Peaches, she understand. Everybody play it innocent first day in. Nobody like being in stir, even good stir like this. But you wait. It grow on you. Give it time, man, you get to like it. Take my word."

A tight, racking chill spun up Samuel's back as he began to make sense out of it all. "You mean this is a *jail?*"

Peaches lifted her empty champagne glass leaving a big wet circle behind. "Fourteen square miles worth."

"Oh, my goodness." The magnitude of this development swept over Samuel with clammy rawness. "Oh, my goodness, I'm in *jail*." And with Momma expecting him home promptly at noontime for lunch. "Tell me," he stuttered, "tell me, are there any guards in here?"

"Couple."

"Could you take me to one?"

She extended her hand, the one with the empty glass in it. "Take

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you around the world, you want to go, you buy a lady another drink."

Samuel peered in several of the dirty, glass-fronted cubicles. Moldy hash. Withered lettuce laced with puce dressing. Green cheese. He saw a sign, *If you don't see it, ask for it,* and a little bell. Some *dolmas* or *gerooke zalm?* Perhaps a *broodje* and some *gule aerter.* Then he remembered that horrid scene in the bar.

"I've made my choice," he told Peaches, "two apples and some cottage cheese. Now, how do I get them out?"

She whipped a twenty-two automatic out of her purse, threw it to him and pointed through one of the cubicles toward the kitchen help working inside.

"I can't!"

"Hon, less you got money, ain't no other way." She pulled out an emery stick and ran it, casually, back and forth across her fingernails.

Samuel stared at the gun, shuddered, and slipped it into his pocket. Perhaps they, too, would let him run a tab. He rapped lightly on a coin slot. Nobody inside seemed to notice. He tapped louder. Still nothing. He knocked with the back of his hand, dinged on the bell and sang, "Service." The kitchen workers stopped their work, glared at him and turned away.

One of them, Momma would have called him a jigaboo schmuck, gave Samuel the finger.

With that, all the pressures that had been building up inside Samuel for the past few hours abruptly came to a head.

He pulled his hand back, the one that now had the gun in it, and shoved it forward, smashing the gun butt through a cubicle into the plate of potato salad inside. Shaking mayonnaise and relish off his hand, he yelled, "Everybody in there. Down on the floor. This is a stickup."

The kitchen workers fell to the floor. Nothing to it. "You," Samuel motioned with his gun, like he remembered seeing Warren Beatty do in *Bonnie and Clyde,* "the guy with the chef's hat. Get what I tell you and put it on a tray." The chef stood and picked up a tray. "Two apples, nice fresh red ones, a *large* dish of cottage cheese, and a glass of milk. *Cold* milk. Peaches," he glanced in her direction, "anything for you?" She shook her head. "That'll be it, then." What the hell. "No, wait. Put a few oatmeal raisin cookies on there, too. Now, bring it out here."

The chef came around front and gave him the tray. He took it and motioned the chef back into the kitchen. Samuel watched as the kitchen workers, with what he was sure were glances of grudging

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admiration in his direction, got up off the floor and returned to their work.

Grinning, he carried the tray over to Peaches. "How'd I do?" he asked her eagerly.

After giving him a big, wet, enthusiastic kiss on the cheek (which he rather enjoyed), Peaches grabbed him by the arm and steered him toward a corner table. "You did good, hon. Came on tough with real style. Kinda refined. Keep up like that, you gonna go places around here."

"Do you really think so?" Samuel lifted his chin.

Someone already occupied the table. A man. Stubby beard, threadbare coat, patched trousers, rotted shoes. Peaches poked him on the shoulder. "Officer O'Flynn. Got somebody want to meet you. My friend. Sammy Blonder."

Samuel, Momma would say, his name is *Samuel.* He put his hand out and came on refined. *"Bonjour. Comment allez-vous.* Samuel Blonder. Pleased to meet you, sir. I believe you can help me clear up a little misunderstanding."

Officer O'Flynn fell forward onto the table and threw up. He gurgled softly from the corner of his mouth. "Realistic, ain't it. A bag I slip under my tongue. The warden goes in big for realism when we're on plainclothes detail. Helps put fun in our workaday world, he says."

Samuel dumped his hard-won apples, cottage cheese, milk and cookies into a nearby trash can and swallowed hard. "Sir, I'd like you to help me. You see, I'm not a criminal, and I shouldn't be in here."

Officer O'Flynn blocked off one nostril and blew out through the other. "Not a criminal, huh? What about that little armed robbery you just pulled off?"

"Armed....oh, the incident with the gun. Just now. Well, I was led to believe transgressions like that didn't count. Not in here."

"Right. They don't. But they indicate you got a culturally disruptive personality. And that means that for the good of society in toto, you are best sequestered in a crime containment area such as this where you can be left to relate only to other members of your own psychosocial peer group." He smiled proudly at the slickness of his obviously well-rehearsed presentation. "We got a book back at headquarters tells all about you lousy bastards. Got some nifty pictures in it. Naked queers in some institute."

Samuel squatted down to O'Flynn's eye level and gripped the side of the table. "I'm not a criminal. I have never been a criminal. My name is Samuel Blonder. I'm an actuarial agent with Mutual of New Jersey. I live

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out in Rochefort with my mother. In a two-bedroom brownstone. I'm Boston U. Sammies. I have a charge account at Bloomingdales. My God, I *always* put money in parking meters, even if I'm only dashing in and out of the store. Now, does that sound like the behavioral pattern of a hardened crook? Look. I locked myself out of my car. I had just hooked a coat hanger onto the doohickey that opens the door when everything went blank. That's the truth. On my mother's honor, I swear it."

"Tell you what, Sammy, boy." Officer O'Flynn pulled a gold-plated Parker T-Ball Jotter out of a hole in his T-shirt and scribbled something on a napkin. "I'll put a check on it. If you're really clean on the outside....well, we'll see."

"I like you, Sammy, you got class. Ain't nobody in here smart like you. And smooth. You stick around, you gonna be somebody." She slipped out of her bra and panties, and sat down next to him on her sofa.

Hoo, boy, Samuel thought, bolstered by several more bourbons. If Momma could see him now. Momma insisted on picking out his lady friends herself. Unfortunately, she always selected fat girls with pimples. In fact, she brought them home so regularly, Samuel had begun to suspect she'd found a factory somewhere that manufactured them in bulk.

Peaches nibbled his ear. His pants bulged up.

"What you want go back outside for," Peaches cooed. "You stay in here, you be my man. I take real good care of you. We go up in the world together." She ran her bosom over the front of his shirt.

Like that girl had. The day Momma got sick in London. "Go out," Momma told him. "Enjoy yourself, you're young. Go to the British Museum, look at the mummies, see the dead things, and remember, your Momma loves you."

He'd met the girl at the Elgin marbles. They went to the Cheshire Cheese, where he poured the wine without even sniffing the cork and ate steak and kidney pie with his salad fork. Later, they went to her room, a walkup in a tiny apartment house on Cartright-she-called-it-Flower Gardens.

He'd wanted to send her a music box from Vienna, but when Momma found out about it, she said they were all trash.

Imagining the scene he'd be in for should Momma find out about Peaches, Samuel got thoughtful, then giddy. And lastly, undressed.

"Ever since I won a Shirley Temple look-alike contest," Samuel said in response to Peaches'

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question. With an uncharacteristic display of athletic energy, he impulsively hopped up out of bed and touched hands to toes twenty times. "Ever since then, it's been Samuel, my baby, Samuel, my precious, Samuel, the love of my life. Until I could puke."

He bounced over to the window, pulled back the tattered shade, and puckishly exposed his private parts to the world outside.

"I bought a porno record in Copenhagen. Quite mild, actually." He did a spastic pelvic thrust. "First you put your two knees, close up tight. She found it. Boy, was she burned. You'd think I'd taken her wedding corsage out of the scrap book and fed it to the parakeet."

Bounding into the kitchen, he peered into the refrigerator, ignoring several bottles of premium ale in favor of a cheap, domestic beer, which, he noted with sadistic glee, was in a nonrecyclable can.

"But she always gets carried away like that. She made me go to bed without supper when she found out I was in the office check pool."

Someone knocked on the door. Slipping on a robe, Peaches went to answer it.

"Thirty-three years old, and I had to go to bed without any supper. Well, I'll tell you, I've taken about all of her crap I can stomach. I've had it with the chicken soup and boiled paregoric. Right up to the eyeballs, I've had it." He pounded on his chest. "Peaches, I've got a college degree in commerce. I could plot capers you wouldn't believe. Smooth and clever. Horst Bucholtz sliding down the rope into the museum. Cary Grant up on the roof with the jewels. Michael Caine. David Niven. And Samuel, no, damn it, *Sammy* Blonder. *Raconteur, bon vivant,* cat burglar."

"Samuel Blonder?" said a deep, harsh voice.

Samuel wheeled around to face two policemen. "Yes," he whispered, embarrassed by his nakedness, holding his beer can over his crotch.

"Mister Blonder, the department's real sorry about this little misunderstanding," said the smaller of the two without offering any further explanation. "If you'll get dressed, we'll take you on home."

"And the mayor sends his apologies, too," added the big cop. "Your mother's been calling him regular, every 10 minutes, since she found out you was in here."

The little cop chimed in. "Mayor says your mother's got a lot of...what was the word he used, Charlie?"

"Spunk," lied Officer Charlie. "Now, how about getting dressed, Mister Blonder, so we can get you back where you belong."

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Samuel gaped at the two policemen. Trembling, he lowered his head. But didn't move.

"Mister Blonder," said Officer Charlie. "You all right?"

"If it's all the same to you gentlemen," said Samuel resolutely, raising his head, "I think I'll stay on in here."

"You're kidding."

"I'm not."

The two officers glanced at each other, anxious to get him squared away so they could go off duty. "I'm afraid we can't let you do that," said Officer Charlie. "We got rules. Only criminals in the slammer."

Samuel gave that prerequisite some thought. "You know," he whispered conspiratorially, "I masturbate."

"Beg pardon," said Officer Charlie.

"I said, I'm a pervert," Samuel proclaimed proudly. "I cheat on my income tax, and I'm a goddamned DIP to boot!"

Ignoring his confession, Officer Charlie picked up Samuel's pants and held them out to him. "Mister Blonder, your mother said to tell you she'd hold dinner."

Samuel sidearmed his beer can at the two policemen as hard as he could.

"O.K. If that's how you want it," growled Officer Charlie losing all patience. He drew his service revolver, and, at gunpoint, he took Samuel home.

Bright and early the next morning, Samuel heaved a brick through Tiffany's window. His trench coat pocket bulging with jewelry, he turned his suitcase on end, sat down and lit an unfiltered cigarette.

He didn't have much of a wait.

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Karen Lee Killough is an x-ray technologist by profession, "married to an attorney who is my best and most severe critic. When I have the time, and I'm not nursing a broken bone from the last time my steed and I fell going over a jump, I train hunters and teach riding."

The Siren Garden

by LEE KILLOUGH

Silicivitae gardens are the fashion these days. Since some enterprising inkeeper bought Dalria, renamed it The Siren Garden, and made it the place to see and be seen in Gateside, not a week pases without some wealthy woman sitting down in my office with an open checkbook and inquiring how much I charge for crystal scaping. I leave Lee Emrys, my partner, to find a diplomatic way of refusing her. I laid out the garden at Dalria, but I did it for love, for Lorna Dalriadian, and I will never do another. I refuse to even visit Dalria again. Lee sees to whatever maintenance is necessary.

I dream of it, though. I walk down the winding stairs and paths past the softly singing clusters and sit down to rest on a shaded stone bench. I am listening to the counterpoint of bells and vibratos when I hear a breathy laugh that carries even above the musical chords. I look up to see Lorna Dalriadian coming toward me, her eyes in shadow beneath her long, pale bangs. I reach out to brush the hair aside, but there is a crash and then a terrible scream rising higher and higher until I wake up. Such nights I do not sleep again but sit awake until dawn, shivering with something that is both grief and rage.

It was late spring when she walked into my reception room the first time, one of those brilliantly clear mountain afternoons that throw a luminous glow over Gateside's brightly colored buildings. She walked in, looked up at

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me, and struck me mute and stumble-footed. It was not her beauty — women of her class are always beautiful, through the surgeon's art if not nature's, and we have enough subscribers among them that their mere presence inspires no awe — she could have been a hag with the same effect. All I saw of her was her eyes, the largest, most intense eyes that ever mirrored a soul. They were rainbows, kaleidoscopes, the aurora borealis.

The pulsating color hypnotized me. I could have stood indefinitely watching them change from rainbow to green to violet. Not until she lowered her lashes, thick and dark as feather fans, did I realize she was speaking.

She introduced herself and asked about my crystals in a light, breathy voice which inspired a momentary vision of a schoolgirl dipping in a shy curtsy.

Somewhere I found the release on my vocal cords. "Yes, we have a very good variety. Do you prefer to buy or subscribe?"

Timon's Silicivitae is a small nursery. Our greatest volume of business is from buyers, tourists who have come to see the Diana Mountain Transgate and want to take home something that came through it from the stars, something alien. They buy a pendant to wear a few weeks, and when it stops singing, carefully put it away in a box to keep until it crumbles or is thrown away, the memory of the song and beauty having faded as the crystal did.

A subscription, on the other hand, is continuous. The nursery provides replacements anytime the client becomes dissatisfied with the tone or color, or the bloom of the crystal passes.

When I explained the choices to Lorna Dalriadian, she laughed in delight. "I know they're alive, but do you mean they fade like flowers?"

"Similarly." I led her over to the demonstration table and dropped a cassette of sample tones in the recorder. "Are you interested in a constant, variable, or intermittent tone?"

She shrugged, her eyes changing from silver to the blue of a tropical lagoon. "Let me hear them all."

I switched on the tape and played a run of tinkler and chime intermittents, then a vibrato variable, and finally some bell constants. "There are lower toned varieties as well, but young women like yourself generally find them too staid."

"My husband would approve of them then." There was a tinge of sulk in her voice. "Peter says I should project a more adult image."

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I knew Peter Dalriadian by reputation, a man considerably older than Lorna. They called him "The Kingmaker." He was the friend to have when seeking political office, a puller of strings. I wondered how he had found his way out of the smoke-filled rooms long enough to meet this creature of sunshine and dawn.

"I can't decide," she said helplessly. She turned to me in appeal. "You have more experience with these. Will you choose something for me?"

"If you wish, Mrs. Dalriadian."

"Call me Lorna, please." Her nose wrinkled. "Mrs. Dalriadian makes me think of Peter's first wife."

I was never happier to oblige a client. "Lorna, then."

She smiled.

I had trouble talking again. What that smile did to her eyes was more than a mortal man could withstand. "I think," I said in a voice as breathless as hers, "that a chime would suit you best, at a tone near the middle of the aural spectrum, say F above middle C. What is your favorite color?"

"Blue."

I touched the intercom. "Lee, I need a blue F-plus chime with a pendant bubble and habitat."

While we waited for him I explained the cost of the subscription and the care of the crystal. As an alien life form, the crystals cannot tolerate our environment for more than a very short time. They have to be worn in a bubble which insulates them against the temperature and atmosphere and otherwise kept in a habitat in a nutrient solution.

The disadvantage of living jewels is that they eventually die. The habitat prolongs their life only to a point. I told Lorna that Lee or I would be out biweekly to service the habitat and we could inform her when it was time to exchange the crystal for a fresh one.

She was paying me when Lee came in with a habitat under one arm and an insulated carton in the other hand. From the carton came a soft musical note.

Lorna looked up, eyes golden. "Let me see."

Lee opened the box. Enclosed in its pendant bubble, the Siren was nestled in ice, a near-dodecahedral crystal of vibrant cobalt blue. It sounded while she looked down at it. The clear note lingered for a brief, shimmering moment in the air about us before fading. In a few seconds the chime rang again.

"It's lovely," she breathed.

Lee closed the carton and handed it to her with a flourish, announcing he would put the habitat in her runabout.

She stood and lifted her eyes. "Good-by. Thank you so much."

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I came back to reality to find Lee lounging in the doorway with one brow hoisted to his hairline.

"That has to be the most beautiful woman in Gateside," I told him.

"An extraordinary one at any rate," he agreed.

Contrary to popular belief, Lee appreciates a beautiful woman as much as the next man. He just happens to think of them more as fine works of art rather than people and tends to regard my fervent interest in them with the same tolerant amusement he might have for, say, a passion for midnight nude strolls down Stargate Avenue. However, seeing them objectively has given him the advantage of being able to develop a shrewd insight and understanding of them that most men cannot.

"Don't let this new infatuation interfere with your attention to our other subscribers," he warned, smiling.

He also reads me with uncomfortable accuracy.

I repeatedly told myself what he had, but her eyes haunted me. I dreamed of them at night and felt engulfed in them during the day among the glittering crystals in the vivarium. I found myself anticipating the service call on her with absurd eagerness.

I think I stayed in a half daze until one day a week later when the red flashing of the call light warned me someone had entered the reception room. Between the soundproofing of the vivarium and that in our life suit helmets, we can hear nothing. So, there is the light. The inconvenience is a necessity. The much-vaunted singing of Sirens is tolerable only in selective moderation. The cacophony produced by a full-spectrum population of crystals can rupture a man's eardrums. Seven members of the Outreach Five expedition to Wynter's Planet had returned permanently deaf.

I left Lee to supervise the grazing of the vibrato beds and went up front to see the client.

It was Lorna.

Eyes clouded, she held out a plastic carton, "It's dead," she said solemnly.

I opened the carton. The Siren was scarcely recognizable. It lay silent, its color turned to ash grey, the edges of the facets cracked and crumbling. Dead crystals are fragile things, particularly ones that have burned up in exposure to our atmosphere.

"What happened?" I asked.

"I was showing it to a friend and had to leave the room. My friend took it out of the habitat for a closer look.When the sound changed, she dropped it and was afraid to touch it again. By the time I came back it was like this." Her

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eyes were all smoke and green coals. "It screamed," she whispered. "It was a terrible sound, like something in mortal agony."

I knew the sound. No human death shriek matched the horror of it.

"Do they feel pain?" she asked.

"No one knows. It could be a mechanical effect, the temperature change shortening the chime interval and raising the frequency so it sounds like a scream, but we can't say for certain."

"It sounded like pain. I heard it even at the other end of the house."

"Is your friend all right?" I asked. "The ultrahigh frequencies the crystals produce at times like that can result in serious effects."

She looked at me intently for a moment, then past me, her expression thoughtful. She said remotely, "It gave her a headache, and there was a mirror broken." Her eyes focused again and looked down at the thing in the carton. "What will you do with it?"

"On the chance there's still some usuable material, I'll feed it to a grazer."

She blinked.

"A grazer is a class of silicivitae which feeds on the Siren varieties," I explained.

Her eyes went wide and laughter-silver. "A rock that eats other rocks? Show me."

"Timon exists to serve his clients." Taking her elbow I guided her through the back to an observation panel overlooking the vivarium.

I let her stand undisturbed for a few minutes to absorb the sight of table after table of crystals of every color spread beneath the glaring white light of the sun panels. The polarization of the observation panel screened only the harmful wavelengths; it did nothing to diminish the glitter. Lee was moving between the tables, turned into an alien creature by his helmeted life suit.

Lorna sighed and reached out to press her hands against the panel as though trying to reach the crystals.

"Lee is carrying a grazer now," I said.

He placed a reddish blob on one of the beds. Freed, it sat motionless for a short time, then slowly began oozing across the bed toward the crystals, looking like nothing so much as an overgrown amoeba. I explained how the reproductive process of the Sirens utilizes the digestive system of the larger silicivitae to mingle their raw genetic material and form spores that are deposited with the grazers' waste material.

She stared in across the vivarium. "Then that's why they sing," she said wonderingly, "to attract the grazers."

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I was startled by her perceptiveness. To my knowledge none of my other clients had ever thought to wonder why the crystals produced their varying sounds, let alone been able to deduce the reason. There appeared to be a fine mind behind those magnificent eyes.

"It's marvelous," she said, "I suppose there are bigger rocks that eat the grazers and bigger rocks who eat them."

"On Wynter's Planet, yes."

She leaned against the panel. The aurora borealis of her eyes was iridescent. "It must be exciting working with such fascinating creatures."

I nodded.

She sighed heavily. "My life is stiflingly commonplace." There was a short silence while her eyes wandered over the tables. "Would you let me go in and pick out a new Siren myself?"

I regretted refusing her but it would have been a great deal of trouble with little point. She could not have heard through the helmet, and I did not want the responsibility for a novice in an alien environment.

Her eyes greyed with disappointment.

"But we do have a number of crystals freshly picked for centerpieces. You can choose from among them," I suggested.

The picked crystals sat in rows on shelves inside a refrigerated cabinet, their root webs emersed in pans of nutrient solution. A wave of cold and discordant sound rolled out over us as I opened the first door. The intermittents inside clanged together and broke into an irregular arpeggio, followed by a series of chords, some harmonious, most jangling.

After deliberation, Lorna chose a wine-red tinkler.

"Centerpieces," she said as I packed the crystal. "For Kathryn George's banquet tomorrow night?"

I nodded.

"I've always loved her decorations. If you're putting them together today, may I watch?"

Nothing male could have refused that violet gaze. I brought her a thermal jacket and oxygen mask — the workroom is low in oxygen and maintained below 32 degrees for the comfort of the crystals — and wondered blissfully how I was going to concentrate with her eyes watching me and the warm, spicy smell of her filling my nostrils.

She solved part of the problem herself. "I don't want to just stand here. Is there something I can be doing?"

I let her carry the pans of crystals from the cabinet to the worktable and hand me the velvet-covered stepped blocks we

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used for bases. Soon I was explaining the techniques of crystal arranging. A single piece was simple enough, only a matter of combining low-toned constants, variables, or intermittents with complimentary high-frequency ones. The challenge of a commission like this was making all the arrangements blend with each other as well as within themselves. I showed her how to break off the root webs leaving enough for attachment to the base in a pleasing pattern of color, then how to seal the bell covers over the finished arrangements. By the time Lee arrived, his vivarium chores completed, the centerpieces were proceeding smoothly, and above her mask, Lorna's eyes were reflecting the colors of the crystals around her a hundredfold.

Lee lifted his brows. "I appear to be superfluous."

I grinned behind my mask. "Almost."

The call light flashed.

"Correction, you're indispensable; I'm being paged."

The customers were six middle-aged ladies. From their conversation I had no trouble deducing they were on their way back from visiting the Transgate and happened to notice my sign. They were interested in inexpensive Sirens for souvenirs.

I steered them into buying pastel tinklers and after giving them instructions for prolonging the bloom of the crystals — which they no doubt heard and would follow as poorly as every other tourist — ushered the chattering flock to the door and hurried back to the workroom.

The six ladies were only the first of many interruptions. In addition to a stream of tourists there were calls from subscribers who wanted exchanges and one who wanted to commission a small arrangement to send to his wife in the maternity ward of the hospital. Despite them the work progressed so swiftly that by closing time we had all but six of the twenty-five centerpieces finished.

Lorna stood looking around at them, listening to the rise and fall of musical notes.

"How beautiful," she said. "It's like a concert."

I quipped, "And for my next selection I shall play the *Wynter Garden Concerto.*"

Lorna's eyes blurred. They looked through me, as remote as Andromeda.

"Lorna?" I asked anxiously.

"A garden," she said slowly. "A garden —" The aurora burned again. Her voice lilted, "Wouldn't that be marvelous."

Lee watched her, frowning slightly. "Not a garden of Sirens."

I explained. "They have a

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pecular characteristic. Singly, they're unaffected by events around them, but the larger the number grouped together, the more sensitive they become. When people near them are highly emotional the Sirens react, usually by raising their frequencies. The result is a sound that would shame a banshee and, if the group is large enough, shatter every glass in the vicinity. A garden could wreak havoc with the entire neighborhood."

"Really?" For an instant her eyes flared like an animal's reflecting firelight, then, smiling, she took my hands. "This has been one of the most *un*common days of my life. May I come again sometime?"

I resisted the desire to pull her arms around my neck. "Of course."

"I'll be sure to let you know how the centerpieces looked at the banquet. Good-by, Lee."

He nodded.

Both our gazes followed her out.

"God, but she's beautiful," I said. "Those eyes."

"'...Eyes have all the seeming...'" Lee murmured.

"What?"

He turned to regard me with concern. "Be careful. Don't fall in love with her."

I snorted. "That would be foolish. You know women like her; they're faddish. They throw themselves into anything new to escape their boredom. I don't expect her to hang around here long before finding a new enthusiasm."

"And if she stays awhile?"

"Just remind me how notoriously bad-tempered her husband is."

I almost convinced him.

I almost had myself convinced until I saw Lorna again. She came in the day after the George banquet, her mood indescribable: manic, yet tragic, as though wanting to laugh but too near tears. Something wild paced behind her eyes, spilling out an incandescence that left me groping for air and earth.

"It was a disaster," she said. "Oh, not the arrangements. Those were beautiful. I wanted to tell everyone I'd helped make them, only —" She sighed. "— Peter said it would be like admitting I scrubbed floors for a hobby.

"The trouble was the seating arrangements. Mrs. George put the composers Denny Keys and Lincoln Howarth across the same table from each other. Keys is a rabid Traditionalist, you know. He made some disparaging remark about the harmonies of the centerpiece. Howarth took it as a direct attack on the sonics he uses, and the fight was on. They yelled and the crystals started whining. That set off every arrangement in the room."

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I groaned.

"It was chaos. The noise was like...like nails being driven into my brain. I wanted to fight myself to break something. So did everyone else. They all started screaming at each other. Glasses and plates shattered right and left. All the windows broke. Keys and Howarth almost killed each other before they were pulled apart."

"Cancel Mrs. George's subscription," Lee said.

Lorna patted his hand. "You still have me."

She became a regular visitor. We could expect her at least three or four times a week. I asked her how she had so much time.

"Peter is gone most of the time on political maneuvers," she replied. "He never takes me, he says, because I'm not sophisticated enough. That means he thinks I'm childish."

I never considered her childish, though it was true she asked questions like one, by the hundreds. Some were foolish, some delightfully innocent. Many were shrewdly intelligent.

She learned to help with the customers and carry out small chores in the vivarium. She took to doing many of the arrangement pieces. Surprisingly, she had a natural talent for design that was a bit better than mine. With training she might have been as good as Lee. Before long I was living almost solely for the hours she was there.

Only Lee seemed dissatisfied with the situation. He treated her with unfailing courtesy, even gallantry, but his reserve never thawed when she was present, and if he smiled, it was only with his eyes.

"What do you have against her?" I demanded finally.

He looked up from the arrangement he was doing for the Guilford wedding reception. "You haven't been able to give an entire thought to the nursery since she's been around."

I grinned foolishly. "Guilty. Still, there has to be more to it than that. I'm periodically distracted by one girl or another."

He switched the positions of two tinklers with great deliberation. "This one is out of your class, Michael."

"You think I'm fortune hunting?" There was an edge on my voice.

He replied, "I wonder what she's hunting. She's a very extraordinary woman. She could have any man she wanted."

"And I suppose it's impossible she might want me?"

The tinklers jangled out of key.

"What can you give her a hundred wealthier, cleverer men cannot?"

"She's a lonely woman, Lee.

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Her husband spends all his time playing power-behind-the-throne, and when he's home he does nothing but find fault with her. Lonely people fall in love with people who love them in return."

"She isn't in love. Look at her objectively. I won't say her naiveté is necessarily a pose, but it's only her surface. Once in a while you can see something very different in her eyes, something dark and arcane. If she wants you, it's for a reason, not for yourself."

The rising whine of the crystals rasped the edges of my teeth. I ground them irritably.

"I would expect you to be incapable of understanding love between a man and woman, but I never thought you might be a jealous bitch."

He took a deep breath. "I don't want to see you hurt."

"Well, I don't want your solicitude," I snarled. "Stay out of my personal life, or I may forget it's impolite to strike a lady."

His eyes shuttered. "Please lower your voice. I'll never finish the arrangement while the crystals are screaming like this."

Typical, I thought. Frustrate him and he sulks.

It made the time with Lorna more pleasant than ever. When she did arrangements, she laughed or sang along with the crystals. Live groupings planted in sand with the roots intact for maximum longevity fascinated her the most.

"They're like miniature gardens," she would remark. "Is a real garden really impossible?"

"You're certainly set on having a garden, aren't you? Yes, I'm afraid it's impossible. Remember Mrs. George's banquet?" I asked. "Imagine that effect multiplied many times."

She sighed. "But it could be so beautiful."

She dug a hole in the sand with her forefinger. Pressing a hummer into the depression, she pushed the soil back over the lacy web of roots.

"There must be some way to control the intensity of their reactions," she said thoughtfully. "You use an unbalanced nutrient to produce minor key tones for funeral arrangements. Can't something of the same order be done to reduce sensitivity?"

I considered the possibility. "It might." The longer I thought about it, the harder I thought about it. If I could desensitize the crystals there would never have to be a repeat of the George disaster. "Damn, I wish I had the time to experiment."

Lorna's eyes glittered obsidian-dark. "I have nothing *but* time."

I let her have one section of the cabinet. She filled it with crystals set in nutrient-soaked bowls of sand. Curiosity drove me to open the cabinet every few days. Each

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time the sounds seemed stranger. Lorna's expression varied between abstracted and frustrated on cycles of four and five days. I decided it was wiser to let her tell me in her own time rather than ask about her progress.

Then, some weeks later, I was shocked out of my concentration over bookwork by a howling that raised goose pimples clear from my bones. The sound seemed to be coming from the workroom. I raced toward the source speculating wildly. Had the cooling coils gone out?

Lorna staggered out, clawing off her oxygen mask. Gasping, she threw herself at me and buried her face against my chest. It seemed only natural to put my arms around her in return.

"Lorna, are you hurt?" I demanded.

Suddenly she threw back her head and laughed triumphantly. "They just sat there. The others went wild when I screamed at them, but the blues just sat there."

The sound faded, resolving into the recognizable tones of intermittents and variables. Through the open doorway I could see the worktable loaded with the bowls of crystals. At one end, slightly separated from the others, were two blues.

"You desensitized them?" I asked.

"Some. They mumbled a little. A garden would probably be noisy enough to irritate but not harmful."

I held her off admiringly. "What did it?"

"Magnesium deprivation." She raised onto her toes and kissed me fleetingly. "When can you start my garden?"

We began the next day with copious sketches and photographs of Dalria's grounds from every angle; then while the landscapers prepared the beds to my specifications and the electronics people installed the domes and life supports, I designed the arrangements.

Because we were too busy for Lee to manage the other nursery business by himself, I worked at night. The workroom was the only lighted area in the building. Even the sun panels in the vivarium were off. Without light the crystals became inactive, and it was uncanny to peer into the vivarium and hear only the low hum of the cooling units, or to bring a crystal out of the cabinet and have its tone drag, blurrily flat, for several minutes before a true note sounded, as though it resented being awakened.

Each night I conjured Lorna Dalriadian's image out of the quiet solitude and darkness. With her before me where I could study every

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detail: her voice, laughter, movements, the glory of her eyes — I laid down my patterns of color and sound. Nothing strident was allowed, nothing heavy or staid, only bright, pure colors and light, dancing sound: the softest of backgrounds with melodies of tinklers, high chimes, soft bells, and whispering vibratos.

As each bed was completed, the types and positions of the final choices diagramed on full-scale drawings of the beds, I showed the chart to Lorna. After the first time she declined to see more, claiming she could not imagine the sound from a drawing.

"I'll just wait until everything is finished."

I would have liked Lee's opinion, just for reassurance, but he never expressed either interest or curiosity, and I was too stubborn to ask after my last outburst at him.

The morning after I finished the last sections, I overslept. When I arrived at the shop, Lee told me Lorna had called to say she would not be in.

"Her husband has business out of the city, and this time she's gone with him."

I stared at him, outraged. Gone out of the city? As I was ready to start planting? How *could* she?

Lee stared back. "She *is* married to him," he said, "and she sounded very happy, like a bride."

I would not believe it. Peter Dalriadian never gave her a happy moment in his life. Lee was being bitchy again.

He continued, "She said to tell you, though, she's looking forward to seeing the garden when she comes back." He paused. "I've been looking over the diagrams."

It was then I saw the pile of charts on the desk. "What do you think?"

"It's a portrait of Lorna, isn't it?"

I was a little surprised. "How did you guess?"

He lifted a brow at me. "It's too graphic not to recognize, far better than I think you realize. Sirens may be the only medium suited to expressing her. When do you want to start planting?"

We spent the next several days on service rounds, notifying subscribers we would be temporarily unavailable for new commissions; then we closed the shop and devoted ourselves completely to the garden.

It was a tedious job. Each crystal, insulated in a bubble, was numbered. It had to be matched against the diagrams for bed and position, then transferred to the bed through the access hatch in the back of the dome, removed from the bubble, and planted, using waldos. The hatches were small to lessen the loss of atmosphere and

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cold while open. Since each bed involved dozens of crystals plus accent pieces of driftwood and obsidian and sandstone boulders, the planting could occupy the majority of a day. On our best days we were able to finish no more than two beds each. One particularly long, narrow bed which had four separate hatches took two and a half days to plant.

But while the work was slow, we felt better instead of more tired as it progressed. Around us the silence of the first day disappeared, replaced by music that grew louder and more varied each day. Pieces of slender, airy sculpture arrived to fill the vacant pedestals and fountain centers. I was delighted at how closely Lorna's preferences complimented my arrangements. Benches were placed along the paths and at the landing areas of stairs. We watched the garden transform from numbers on paper to glittering reality.

I found it hard to believe it was my work. It was and yet was not what I had diagramed in the workroom. The sounds were so different in the open.

"It's good," I said incredulously, standing with Lee on an upper path and looking down over the terraces.

He smiled.

"Tomorrow we'll finish the last beds," I said. "In another week —"

I turned to look up at the house and accidentally bumped a sculpture pedestal. The graceful form on top tilted. I managed to catch it an instant before it fell.

"— in another week Lorna will be home," I finished.

I arranged to be there when she took her first walk in the garden. She said only a quiet hello as she joined me near the house, but the sun was shamed by the light in her eyes, and her fingers closed warmly around my hand.

We followed the winding paths, climbed the curving flights of steps, paused at the fountains and statuary. As we walked, the music of the Sirens changed continuously around us. A soft, wistful collection of chords became haunting, then rippled laughingly before blending into a clear, joyous interchange. Tinklers blended with the splash of fountains, and arpeggios of chimes rang in the shade of spreading old trees. Lorna walked in silence, her fingers tightening around mine at each new wonder we encountered. It was not until we had returned to the terrace at the top of the garden that she said anything.

Then it was only a whisper, "Oh, Michael."

She looked up at me and her eyes caught mine. She reached up to touch my cheek. "It's...perfect."

Her eyes were bottomless. I let myself fall into them, fall endlessly

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into the glorious aurora. But there was no fiery color. Unexpectedly, it was cold and empty, a void of darkness relieved only by a sullen red glow. In panic I groped for a hook back to reality.

"I almost broke one of the sculptures," I said. My voice sounded tight. "You ought to have them bolted down."

"Of course, Michael." She laid her head against my chest. "I dreamed what it would be like. Every day we were away I imagined how it would look and sound, but I never thought it could be anything like this."

I put my arms around her. "I was inspired."

She laughed. The sound struck fire deep in my chest. Her arms slid around my back, and as they did the heat diffused until even my fingers and toes burned.

"Shall we have a showing, Michael? I'll invite every art critic in the country."

"That isn't necessary."

She looked up at me. "Don't you want the world to know what a genius you are?"

"Not particularly. I designed this for you, because I l—"

Who was I to declare love to a woman like this? Yet, why not? Who was more capable of making her happy?

"Lorna," I said before I lost my nerve again, "I love you."

I never had time to analyze the sudden flare in her eyes because suddenly a male voice called, "Lorna!"

I jumped backward as though she had become electrified.

"What are you doing?"

We looked around at the man in the walkout window. The face was a familiar one. How many times it had appeared dimly in the background of photographs of political figures I could not begin to estimate.

"Hello, Peter," Lorna said.

I switched my gaze to her in surprise. I had never heard that coolly assured tone before.

"This is Michael Timon. He was just showing me what he's done with the garden."

"Timon?" Dalriadian came forward, eyeing me narrowly. "*This* is the one you're always talking about? I thought Timon was that swish who works on the habitat."

"Where could you have gotten that idea?" she asked.

"From you, obviously," he snapped. "You know I wouldn't have let you spend week after week down there if I'd known Timon was a real man. You deliberately lied to me. Why?"

"Mr. Dalriadian, there's nothing —" I began.

"I'll get to you, too. Right now I'm asking my wife!"

"I've done nothing wrong.

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Everyone can testify I've been completely faithful."

"Testify? Have you been planning a hearing?"

"Mr. Dalriadian," I began again.

This time it was Lorna who stopped me. Putting a hand on my arm she said, "You'd better go. I'll straighten this out."

"He's not going anywhere until I let him," Dalriadian snarled.

Her voice rose for the first time. "Peter, you're making a fool of yourself."

"Unless you've done it first."

She had edged sideways until she was on the far side of him. To look at her he had to turn his back on me. Down at her side, her hand made sharp gestures toward the gate. When I did not move immediately, she sent me one insistent look. Reluctantly, I backed away. I allowed her to send me away only because it was obvious she was familiar with scenes of this kind.

The sound of their voices followed me to the truck. As I climbed in, I heard the quality of the tones change. They seemed to be moving toward the garden. A low whine plucked at my neck hairs, confirming my guess. The argument was in the vicinity of enough Sirens to disturb them.

I started the truck, feeling relieved. The noise of the crystals would stop the quarrel before long.

Lyrae Drive serpentined around the mountainside. At one point it doubled back on itself and opened onto a vista terrace almost directly above Dalria. Driving past, I could look over the edge and see most of the grounds.

I slowed the truck to a stop to watch the Dalriadians.

They were still fighting. Lorna stood in the middle of a path, chin high. I was too far to see her expression, but her stance looked defiant. Her husband stood threateningly over her. He grabbed her by the shoulders. She shook her head, emphatically protesting something. He started shaking her.

Suddenly she twisted loose and fled up the nearest steps toward the house.

He followed for one flight. She was too much younger and faster for him to catch, however. He stopped, leaning against a sculpture pedestal, and shook his fist after her.

She kept running.

As Lorna disappeared into the house, he stared after her for a moment, then turned his head, looking around at the domed crystal groupings around him. He put his hands over his ears. I could well imagine the effect the sound that even desensitized Sirens produced must be having on his nerves. Clenching his fists, Dalria-

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dian took a step toward the nearest bed. He stopped. Then, without warning, he spun and picked up the sculpture in both hands.

"No," I shouted, forgetting I was too far away. "Don't."

He swung the sculpture like an ax and smashed at the top of the dome. The domes were built to withstand accidents but not deliberate assault; it shattered raggedly.

Still gripping the sculpture, he turned toward a second bed.

I clutched at the wheel of the truck, steeling myself for what I was powerless to prevent.

It happened even before he made the first blow on the dome. He stiffened. Dropping the sculpture, he clutched at his head. I was too far away to hear him scream, but I imagined it, and it blended with the faint, distant death shriek of the burning Sirens. He ran in a circle clawing at himself, staggered, and fell. Flopping once, he lay still.

I put the truck in gear and spun it in a tight turn back toward Dalria.

He was dead, of course. I was sure of that even before I touched him. The one bed of silicivitae were dead, too. The others sang softly once more, their irritation forgotten now that the source had gone. I dropped Peter Dalriadian's wrist and climbed up to the house.

As I reached the terrace, movement in an upper window caught my eye. I looked up. Lorna was peering out between the drapes. I started to wave, thinking she was looking at me, then I saw her gaze was higher, on a line somewhere over my head and down into the garden. I followed it quickly. Could she see her husband from there? I could; she must be able to. I turned, not quite sure how I could help her but wanting to see her reaction.

She was smiling.

Something cold crawled up from my toes to my belly and put a

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long, sharp-nailed hand around my heart.

The drape dropped into place once more.

I would not believe what that smile suggested; yet, how perfectly everything fitted: her interest in Sirens after the accident and her friend's headache, her abstraction when I mentioned the potential deadliness of groups of Sirens, her determination to have a garden, the sculptures left loose on their pedestals. Then there was that scene on the terrace where her violently tempered hypercritical husband would see it. It was very clever. What prosecutor in the world would think of trying to prove she helped Peter Dalriadian murder himself?

How much, then, had been a lie? Had she ever felt genuine affection for me, or had her kisses and caresses been a fraud? Did the garden really thrill her? Had she ever felt anything but the desire for the swift completion of her plans?

I wanted to go to her, to plead for reassurance and fall into the golden eternity of her eyes. I looked up at the window, torn.

The Sirens sang in the garden. I remembered that her eyes were not golden but dark and empty. Using every shred of self-will, I wrenched myself away, digging my fingers in my ears, and ran for the truck.

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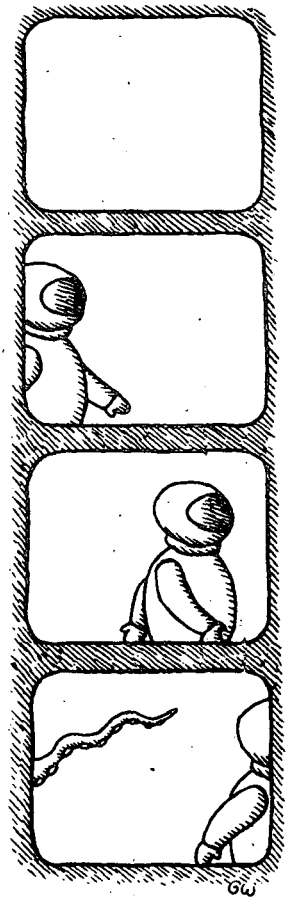
WHERE THE DEER AND THE ANDROIDS PLAY

A major problem with the film medium has always been its inability to give much in the way of background information (unless the characters talk a lot, which isn't done in contemporary film where the concentration is on the visual). In literature, a good writer can subtly slip in all sorts of information, and if he wants to pull off an unlikely event, character, or background, he can much more easily justify it in the written medium with some neatly worked in information.

This is particularly applicable to sf and fantasy which is in ordinary terms, nothing *but* unlikely events, characters and/or backgrounds. A science fiction situation which could be made entirely logical in literature with a couple of well placed paragraphs of explanation and justification ends up on film as totally asinine for lack of same. This is why so many sf films seem inane to genre fans who grew up on masterly extrapolators such as Heinlein and the like. There is just no way in film of getting across the detailed background that is necessary to the verité of good science fiction.

BAIRD SEARLES

Films



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This is one (but only one) of the major problems with *Westworld*, written and directed by Michael ("Andromeda Strain") Crichton (his feature film directorial debut, by the way). What could have been a really good idea just doesn't come off because there are too many unexplained inconsistencies and, at least from the viewpoint of one who *did* grow up on Heinlein, it fails to convince almost immediately.

In the very near future (a supposition based on the fact that there is no attempt at any futuristic stylization of costume or general look), an adult amusement park offers three total environments — Roman, medieval, and Old Western. For $1,000 a day, the "guests" can become a part of these worlds, the inhabitants of which are androids (or robots, as they are consistently called throughout the film). Two young men, Peter (Richard Benjamin) and John (James Brolin) register in Westworld. They are involved in bar room brawls, jail breaks, a night in a bordello and a couple of shootings — in both of which the same android, a cold-eyed gunslinger (Yul Brynner), is killed. (The dead android bodies are collected at night and recharged and repaired.)

Counterpointed to all this are scenes "backstage," the master control room from where all the action is governed by computer, where we learn that there is a growing breakdown rate among the androids.

Finally one morning all control over the robots breaks down; they continue to run on stored energy, but otherwise all power fails, including the master control room, whose doors are electrically activated. The robots run amok, raping and killing the guests. The revivified gunslinger shoots down John and pursues Peter through the three worlds and into the sterile deserted corridors of the control area.

Buried in all this is a good premise (not to mention our old friend from the 50s, technology run amok) that could have made a fascinating combination of action and intelligence. But here it is badly botched. Inconsistency after inconsistency pops up. For most of them, by straining a bit, I could come up with an explanation but dammit, that's not my job as part of the audience. I want to be convinced and will certainly meet a work half way, but will not let it be taken for granted that I am too dumb or too lazy to care about these things.

As an example: why are all the guests so amazed at the androids? It is a reaction of total unfamiliarity which implies that they are unknown elsewhere. Surely a

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technological development such as that would not be the monopoly of an amusement park! Nit picking, you might say. Maybe, but enough little nits like that and a film falls apart...and this film does.

There are other problems. Whatever talent Crichton has is literary; the direction here, aside from some tricky camera conceptions, is painfully obvious. There is also the fact that we are told almost nothing about the two major human characters, which makes them about on a par with the android characters in the matter of audience empathy. And the film looks tacky — I've seen better medieval recreations at Disney World.

So all in all, what could have been a fascinating robot/human conflict fillm misfired — possibly because the idea is just too sophisticated for film to handle.

Things-to-come-department... "Childhood's End" as a film is on again, this time supposedly to be directed for Universal by Abraham Polonsky ("Tell Them Willie Boy is Here"). I'm not going to hold my breath...More likely is the upcoming film series based on Doc Savage made by George Pal. The first, "Doc Savage...The Man of Bronze," is to start shooting in January.

Literary department...Vol. 2 (G-O) of Walt Lee's stupendous "Reference Guide to Fantastic Films" is available. I won't repeat my superlatives *re* Vol. 1, but it should be known that it can be had for $9.95 (complete set of 3, $28.50) from Walt Lee, PO Box 66723, Los Angeles, CA 90066.

Coming next month

The April issue is a Special Robert Silverberg issue, the eighth in our series of special issues devoted to distinguished writers in the field. The centerpiece of the issue is a major new novella by Silverberg, "Born With The Dead," about a new aristocracy of rekindled deads. Also included will be a Silverberg bibliography, a profile by Barry N. Malzberg, a critical appraisal by Thomas Clareson. Cover is by Ed Emsh. Watch for the April issue, sure to be a collector's item.

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Gregg Williams ("The Computer and the Oriental," July 1973) returns with a new TABROT story, in which the military misfits of the Tuesday Night Forum mount a crash program to invent an electric nail.

Plastic and Practical Jokes

by GREGG WILLIAMS

"Praise be to the electric nail," Colonel John shouted.

"Knock it off," I yelled, "I'm trying to get some rest." I turned over on the couch, and my aching muscles made it hurt more than it should have, even allowing for the fact that the couches Finney provided for us were chosen for their incompatibility with the human organism in any position.

It was perverse that Finney, proprietor of the Hat and Barrel Pub and protector of the Tuesday Night Forum, should have allowed such furniture to exist in his establishment, especially in the Inner Sanctum. But he explained it to me this way: "A man can't drink when he's a-laying down. And Ireland sober is Ireland stiff!"

Ditto for the U.S. of A. — and the Tuesday Night Forum.

The Tuesday Night Forum is the only organization of its kind that runs practically twenty-four hours a day, seven days a week. You see, about a quarter mile down the road, as the New England crow flies, lies a military institution called the Tactical Army Base Research Outpost no. Two, TABROT for short. In it are contained the more indispensable misfits of the armed forces, channeled (or so they think) to some good use.

Take Colonel Johnny T. Bartlett, who had just revived Socrates, our local shrink, from a fitful sleep: he was transferred from the Navy for overprogramming a computer (affectionately known as PATTON II) to interject some rather interesting speculations about some general's genealogical

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background during a simulation war game.

There are about forty of us who work for TABROT — and we work whatever hours please us. The Tuesday Night Forum is sort of our home away from home, and the upstairs floor above Finney's Hat and Barrel Pub, known to us as the Inner Sanctum, is almost always occupied.

We don't have meetings or officers, but it's generally conceded that several of us are the ringleaders behind whatever mischief that falls around TABROT. There's Colonel John, our computer expert; Dr. Gus Fletcher, our Ph.D. in chemistry from Boston U. Then there's our resident shrink, Dr. Walter "Socrates" Carnegie, and myself, Dan Green.

The lights in the Inner Sanctum were out, but I could make out about a dozen bodies scattered throughout the room by the light of several table candles. *Selfless heroes, one and all,* I thought to myself, because today had been one of two days in the year when it was a certainty that the TABROT scientists would actually have to do some work. One of them was when we tore down the set for Finney's play in his annual St. Patrick's Day Festival; the other was when we put it up. Each year we'd put off building the set for the play until the last weekend, work until we dropped, and swear — annually — that we would never do it again.

There was a lot of silent swearing in that darkened room.

Colonel John, whose energy seemed almost as inexhaustible as his height, was explaining something to Socrates, drawing rapidly on the tablecloth as he went. (This has been a good thing ever since a man from the Russian embassy, thinking he had penetrated our defenses, found out about our scribblings and contracted an agreement with Finney to buy our tablecloths at fifty dollars apiece. Finney keeps half of it, we buy more beer with our share, and the Russian sits up nights clucking over his top-secret tablecloths — everybody's happy.)

"What's this you're talking about?" I asked.

Socrates gave me a pained smile. "I have no idea at all," he moaned. "Get him off my back, will you?"

Colonel John turned on me. "Dan, let me *tell* you about this; you know about electronics. If we could get this to work, we'd never have to go through what we did today — why, we could build a whole house in a day and not break into a sweat!"

"All right, then," I asked, "what is this miraculous idea?"

"An electric nail!"

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"An electric what? Colonel John, I think you've been working too hard!"

"No, look, Dan, it'll work! Let me ask you, what makes tearing down such hard work? Pulling out nails, that's what. And why? Because of friction! Now, if we could develop some...something that could be made frictionless by an electric current or an electromagnetic field of some sort, flip a switch and pull the nail out like a needle through cloth! Simple, huh!"

Socrates yawned and asked hopefully, "Is there any chance this would work?"

"Well, of course it would," I said, "but I don't think this thing Colonel John is looking for exists. It couldn't be anything in the metal itself, because a metal couldn't act like that and still be a metal. It'd have to be some...some additive, some liquid capable of being polarized for maximum friction one way and minimum friction the other."

"But is it possible?" Socrates asked.

"Yes, it could," I said, rather exasperated. "Socrates, it isn't a matter of asking questions and looking up the answers. It's research and testing and months of trial and error — sometimes years. You don't know what it is until you've found it, but then again, you can't find it until you know what it is. So there you have it."

Colonel John twirled the pencil around in his hand, erasing certain equations and covering them with false ones. I reflected that if it hadn't been for TABROT and the primrose path we'd led the Russians down with some of our fake equations, we'd be behind them in several vital areas of science.

"Well, look," I said, "we're not getting anywhere as it is. Yeah, it's a good idea — we'll ask Gus about it tomorrow."

"Where is Gus, anyway?" Socrates asked.

"He volunteered for control titration checks to get out of working with us on the set." Colonel John stretched his lanky Texan frame to its full length. "Me, I'd prefer a day of hard, honest work to squinting over titration tubes, any day."

"In that case, gentlemen," I announced, "if you have no pressing engagements" — Colonel John slipped quickly back into his chair — "I shall ring the management for a pitcher of the local poison, which we will spend the rest of the night imbibing and contemplating the mysteries of St. Patrick's Day."

"And don't worry about the bill." Colonel John tapped on the table. "It's paid for already."

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We found Gus slumped over a pile of papers, a long-dead cigar that had burned itself out into a long, gray ash on the table beside him. We nudged him.

"You'll have to wait your turn," he mumbled. "Amino acids step to the back of the line. Proteins and polymers first."

"Hey, Gus, wake up!" I told him. "It's morning already."

"I wish you hadn't adone that," he replied, his eyes blinking at me from behind intense black eyebrows. He looked like a tired, fat, half-bald bartender — the first three of which he always was, the last of which he wasn't half bad at (what else would a chemist have a feel for?). "I just got finished maybe a few hours ago."

"Well," Colonel John drawled, "don't let us keep you from your beauty sleep!"

"I wouldn't think of it," Gus replied as his head fell neatly inside the triangle his arms formed on the table.

"Well, what do we do now?" I asked.

"I'm awake, you guys," said a muffled voice on the table. "What do you want?"

Colonel John explained in some five hundred words his brainstorm. "...so what we're looking for is a polymer of some sort whose dipole moment is affected by some variety of electromagnetic wave."

Gus' head rose slowly like a cobra's to meet Colonel John's innocent gaze. "Are you sure all that nailing didn't disconnect your brain from the rest of your spine?" he asked slowly.

"You're not saying it's impossible, are you? We've had liquid crystals that go dark when you run an electric current through them. Current is energy, so is electromagnetic waves — it's only a matter of degree!"

"Well, yes, but —"

"Didn't you tell me about some way to reduce friction by adding some extra links in the synthesis chain?"

"Yes, you idiot, but that wasn't done by remote control, you know."

"Well, Gus, how about a bond that would form onto the molecule only after a certain amount of energy had been poured into it?"

"You could break one down, sure," Gus retorted, "but even then, it would take so much energy..." Me, I was just a nuts-and-bolts-let's-get-it-working-somehow cookbook engineer; so I left Colonel John and Gus to battle it out among themselves. It was a marvelous sight to watch Gus, who had already forgotten how tired he was, chasing Colonel John around the desk, stabbing out with his lit cigar to make a point; it was the sort of thing that kept TABROT alive and kicking.

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This particular quest raised TABROT morale hundreds of points. The discussions, which took place in the offices, in the cafeteria, even at the Tuesday Night Forum, ranged on an intellectual spectrum from heated technical brainstorming sessions to wild tales that usually started, "Guess what Gus did today!" (It was during this period of time that Colonel John performed that startling feat that later inspired our annual "Wet Stogie" award — late one night, he got tired of Gus' method of "proof by intimidation," reached down at Gus from his lofty 6' 2" height, and calmly dunked Gus' hand, cigar and all, into a glass of water).

To say the least, TABROT was caught in the mystique of the electric nail.

The particular result of the "electric nail" adventure will — nay, can! — never be forgotten in TABROT history. We almost got in serious trouble, which for us means we went a bit far.

The eventual compromise, painfully reached by both parties after a period of sado-masochistic collaboration unequalled even in the writings of de Sade, turned out to be far more interesting than the thing they were looking for, anyway.

Gus and Colonel John gave up looking for the radio-frictless plastic (that's what they called it) when they found the radio-melting plastic. The solution was simple: coat a nail with it and drive it into whatever as if it were an ordinary nail — when it comes time to take it out, a simple radio signal will cause the plastic to disintegrate, leaving the nail in a large enough hole that it can easily be pulled out with a hammer or even fingernails.

We ran small batches of our plastic, coated nails with it, tested the undisintegrated nail coatings for stress, durability, hardness. It passed all the tests with flying colors and disintegrated with no problems at all — well, *almost* no problems at all. The only difficulty we had (which could be isolated in a matter of time) was that each batch disintegrated at erratic amplitudes of radio waves with a special (and, fortunately enough, seldom used) range of the spectrum. (Actually, radio interference *wasn't* a problem at all — before the plastic would melt, it had to receive a *directed* beam of uninterrupted radio energy.)

Still, it was back to the workshop.

It was about 2 AM late one Saturday night. Gus, his eyes visibly bloodshot even through tinted laboratory goggles, slumped before four small metal pans half-filled with plastic. "Gentle-

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men," he said finally, "here we have it, at last: Plastics, A, B, C, and D."

"What's the difference, Gus?" Socrates asked.

All he would say was, "Come on. Let's go."

Colonel John led us down numberless dark, silent corridors that took us deep into the bowels of the TABROT complex. Finally, he produced a key that led us into a room marked "Radio Testing Lab."

"Put the samples down there, Gus," he said. "Now what do you want me to do?"

"Give me the same frequency as before, only start at zero intensity and increase the volume."

"Okay," Colonel John said, clicking on some equipment that brought a few neon indicator lights to life. Socrates brought a high-intensity lamp to play on the target area.

"Now watch," Gus said. "Colonel John, start the beam."

We watched the four chunks of plastic for several seconds, then one chunk melted into a small puddle; the others remained solid.

"Note that and go on," Gus commanded.

Colonel John nodded silently.

Then, miraculously, the other samples melted one right after the other.

Colonel John turned off the radio equipment. Nobody said anything; we just stared at the puddles. The enormity of what Gus had invented grew in the silence until it seemed to engulf the whole room, maybe the whole world outside as well.

Finally, Gus said quietly to the darkness, "We can make as many different radio plastics as we like. We can coat nails with them, we can use them in adhesives, we can mold it into any shape we want. We can draw it into threads, extrude it into rods, press it into rods, press it into paper that destructs at the press of a button." The room was still silent, breathless. "There's nothing we can't do with it."

"Gus," Colonel John finally managed to say, "you're right. There's no limit! It...it will change engineering, industry, espionage and security, maybe even the way people live...."

"It's worth millions to anybody," Socrates added. "Industry, business —"

"Or," I added, "the military. Remember, this plastic belongs to TABROT."

Gus looked at me like I had knocked his cigar out of his hand. "That's a fine thing to mention right now," he said finally.

"Well," I said deferringly to my fellow conspirators, "all the more reason that we should get our money's worth out of *our* great

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discovery before *they* take it away from us. Gentlemen, I assume you are aware that the general, our beloved slave driver, has invited the Top Brass" — I can always pronounce things With Capitals when necessary — "to demonstrate the practicality of TABROT in terms of how much money it's made the government."

"So, what have you got in mind?" Socrates asked indifferently.

"Colonel John," I asked, "how small can you make a radio unit big enough to cover, say, the banquet room?"

"How small can you handle it?" he rejoined.

"In that case, gentlemen, I suggest we adjourn to Finney's for an emergency meeting of the Tuesday Night Forum. I have a couple of ideas I want to run up the flagpole and see if anybody will thumb their nose at them..."

The general marched curtly up to me, jingled to a stop, and brayed in clipped tones, "You and your boys'd better march *straight* today. I'm putting all of you on your *honor* today, and I hope to *Gawd* that you don't try whatever that *means* to you and your bunch!"

"Oh, yes, sir," I told him, "you can count on me!"

"I wouldn't try anything if I were you," he rumbled.

Colonel John sidled up to me just after the general departed, "What's the word?"

"The general wants us to be good boys, that's all."

"He's suspicious," Colonel John warned.

"Of course he's suspicious," I replied. "We've done more work in the past two days than we have in the past month."

"And one of them," Colonel John grinned, "was with a hangover. Still, it's amazing how much R&D you can get done when you're properly motivated."

I grinned back at him. "Yeah, isn't it? Hey, where do you have the antenna concealed?"

"Right in the speaker louver above the speakers' platform. The housing is doing double duty, just like a microwave conduit."

"Devious, Colonel John, devious. What about the remote control unit?"

Colonel John took out a package of cigarettes; he pulled off the wrapper, disclosing a metal case bearing about half a dozen buttons.

"Here, take this just in case." He handed me a subminiature ear receiver and thumbnail transmitter.

"Just in case what?" I asked. "Never mind, it's time to start."

As I mounted the speakers' platform, a tiny voice in my ear

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said, "If you can hear me, nod your head." I did. "Good. Now you know what's rigged up; just nod in its direction when you want to let go, I'll be watching."

There were two cafeteria tables covered with cloths flanking the center podium; just behind the seats and to the speaker's left was a table with, among other things, a miniature gyroscope that I designed, the readout of a computer chess game made possibly by Colonel John, and a coat made from a synthetic fabric that Gus discovered. Everyone was beginning to settle down, and the tables up front were filled with already restless VIP's and Big Brass; the Brass tinkled in cadence as they breathed — or at least it seemed that way.

I stepped to the podium and pounded very hard with the gravel. "Gentlemen, gentlemen! On behalf of the workers, scientists, technicians, and, may I say, fellow inmates of TABROT, I welcome our visitors today. Today is a special day for us — for me at least — sort of a show and tell where we all get patted on the back for all the really neat things we've done. No, seriously, there was a lot of work and several failures between the original idea and the finished product." I leaned heavily on the podium; it held. "Even so, I'm proud to say that TABROT has the highest incidence and success of ideas in R&D than any other organization in the world. But I guess I've tooted our horn enough; I think what we've done will say it just as well. So without further comment, I give you our commander and constant inspiration, General Robert Martino."

I retired modestly to the end of one table, gagging slightly, as the general advanced to the podium. "I wish I could get as much respect out of my men as I did just then. I always get the *feeling* at times such as this that the men have *cooked* something up, which," he said, glaring as benignly as possible at me, "I don't think will happen today. All our cards are above the table and ready to show our guests."

He described the computer program so admiringly that Colonel John's voice whispered in my ear, "You know, I almost hate to do this to the guy." I brought the mike up to my face and whispered into my fist, "You're getting soft, Colonel John. Anyway, who worked into the wee hours last night fixing this up?"

The general had just picked up the gyroscope. "...and I don't know much about these things, but I'm *told* that this self-contained gyroscope can achieve up to 40,000 rpm. Now I'll just show you what

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that means in practical terms if I can just turn this on...there! Funny, it isn't spinning...maybe if I get it turning..." As he was probing the sensitive mechanism with his blunt fingers, I gave Colonel John the signal.

Without warning, the gyroscope fell into a half dozen pieces and clattered to the floor — I guess it would if certain key pieces had actually been carved out of Plastic A...

The general instantly turned on me; I responded with an anguished cry that did justice to the mother of a kidnaped only child. "WHAT IN THE WORLD DID YOU DO TO IT?" I screamed and ran off the platform, clutching my dismembered brainchild in my arms.

When I had ditched the parts outside and sneaked a chair in the back of the room, the general was showing off a sweater made of a synthetic material called Tabrosheen (Gus insisted on "Gussite" or maybe "Fletcherite," but he was voted down). The general was saying, "...it's an exceedingly beautiful material, easy to weave, dirt-resistant. This sweater looks about the right size, so I hope you won't mind if I model it for you. I'm sure that you'd rather see a WAC wearing this," he was saying as he put on the sweater, "but I couldn't convince any of them that's all I wanted them for..."

"Go!" I whispered into the microphone.

The polite laughter at the general's joke rose several notches when three seams of Plastic B dissolved and left a split up the back and around the arms of the sweater. General Martino turned a delicate shade of violet and looked for me in the crowd. The laughter continued even stronger among TABROT men, and the general started pounding the gavel for quiet.

The voice in my ear said, "One gavel...going up!" A split second afterwards, the head of the gavel struck the podium, broke off at the stem, and rebounded with a slow grace, describing a gentle arc in the air. The laughter redoubled and there was a short round of applause in appreciation.

The general tensed and almost began to shake. He hurled himself on the podium and began to yell, "Green, where are you!" He didn't finish because the freshly unglued podium collapsed to the floor, leaving the general sprawled on top of the pieces.

"Dan," the voice in my ear said, "I don't want to scare you, but I didn't press the button that time!"

"Of course you did — you did it by accident, maybe!" I spat into the microphone.

"Dan, I didn't even touch it!"

"Are you sure?"

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"Of course I'm sure!"

That gave me something to think about. "Was it a bad batch, maybe?" I asked him.

Just as the general was picking himself up, a piece of ceiling tile dropped almost on him, making a deafening *plop!* as it landed.

"I don't think so," Colonel John said tentatively.

The general was accosted by another piece of tile that struck him somewhat on the shoulder. "What's happening!" I asked.

"I don't know, but I certainly didn't cause it! I think all the plastics are naturally deteriorating. I don't know when they'll go!"

"Is the radio effect just a coincidence?" I asked hurriedly.

"What's that?" It was hard to be heard over the laughter of the slapstick routine going on in the front of the room.

"I mean, are the plastics at least controlled somehow by the radio waves?"

"Yes, I think so," Colonel John's voice replied.

"Then give me the highest intensity you've got and ditch everything at once! I'll go up there and explain, somehow!"

"But—"

"Don't argue, man! Do it!" I was already on my way to the front. The general, a quivering mass of fear, hunched motionlessly on top of an already-fallen tile.

"All right, if you say so," he conceded.

At this instant, four buttons exploded off the general's coat — and my pants felt suddenly loose.

"What the —" I exploded.

"Sorry, boss. I tried to warn you!" Colonel John apologized.

"S'all right." I finally made it to the front of the room. "It's all right," I told the general while clutching tightly at my midriff. "Well," I explained, "it looks like a little joke was played on me, as well."

"A little joke!" he sputtered. "I don't know *how* you did this, Green, but —"

"How I did it," I repeated, moving into my fast-sell attitude as easily as the situation — and my pants — would permit me. "It all hinges" — at this point, the platform collapsed, giving about half a dozen VIP's a sudden jolt at the end of a one-foot drop — "on a special plastic that can be caused to disintegrate on radio command. A radio-controlled plastic, you might say."

"A radio-controlled — Green, this time you've gone too far!" he hissed. "I'm going to —"

"You're going to smile and make up with me," I whispered at him while ostensibly brushing him off and generally being subservient.

"I'm going to *what?*" he exploded under his breath.

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"You're going to get out of this as gracefully as possible and leave me to explain! Remember that toy prototype of the gyroscope...?"

"How could I forget?"

"Precisely. Well, this is bigger — a lot bigger!"

The general blanched and tried to compose himself. Turning to the bewildered audience, he managed to say, "Despite his rather...unconventional display of his new discovery, one of my engineers — and foremost scientists, I might add — Mr. Dan Green, has made quite an important discovery indeed. I think I had best leave Mr. Green to tell you about it now." With this, he staggered into the audience, where a chair was found for him and he collapsed thankfully into it.

"The demonstration didn't...uh ...quite go the way we wanted it to," I explained. "In time, I'm sure we will be able to refine our radio-controlled plastics so that they are, shall we say, more pure. But an interesting side effect of this plastic is that it also dissolves upon contact with air..."

"In other words, it's biodegradable!" said a VIP.

"Why, we could use this for..." a three-star general chimed in and began to browbeat what looked like his attache.

"This has tremendous possibilities..." a milquetoast scientist with large glasses added and rushed to Colonel John. In a minute, they were both gesticulating frantically and drawing on the floor. The VIP and the general and several others started crowding around. The little scientist turned on the general and hit him sharply on the shin. "Get out of the way!" he commanded. "Get out of the way, I say! Don't step on them!"

"Gentlemen, gentlemen," I yelled over the din, "I suggest we retire to a place more conducive to our discussions, in fact...in fact, gentlemen, the birthplace of this idea — our local tavern. We have a private hall upstairs with plenty of room, plenty of paper, and plenty of the local refreshment, if General Martino will provide..."

The general shook his head weakly.

"If that be the case, I make a motion that we adjourn to Finney's Hat and Barrel Pub! It's just a quarter mile down the road past the main gate. Do I hear a second? If so, all in favor of the motion, let it be made known!"

The hearty "Aye-uh!" that filled the room was majority enough.

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Thayer Waldo was born in Paris in 1919, has been a newspaperman (largely foreign correspondent) and free-lance writer for30 years, with stories and articles in *Satevepost, Harper's, Holiday* and others. He has spent most of his adult life abroad and is presently living in Mexico, working on a book about U. S. policy in Latin America since WW II.

The Lunatick

by THAYER WALDO

It was midafternoon of his second day at the shore, an hour or so after the formless initial meeting with the Russians, that Perrin began to realize what was happening.

More precisely, that was when he first acknowledged to himself that a true cause-and-effect pattern did appear to exist. The evening before when he and Steiner had taken a quick dip, Perrin dismissed the sudden three-meter wave as a freak of nature, though it caught them wholly by surprise and knocked Steiner sprawling into a surge of surf. (As usual Perrin had ventured no farther than knee-deep, and he saw the great thrust of water in time to stumble almost clear before the spent wash of it foamed around him.)

"Christ, this is a real bitch!" Steiner had growled, spitting and knocking water out of his ears with the flat of each broad hand. "The goddamn stuff was just lapping at the sand when we got here!"

They left then, for the quick tropical night was closing in, and the incident had been put out of mind before they reached the hotel.

But now, backing up the beach at a quickened pace, Perrin felt something close to panic. This time he had stood for five minutes on the low sea wall at the beach edge, watching the lazy flux of waters twenty meters ahead, curling hardly higher than a handspread before they broke sedately onto the brown sand.

Then he began walking toward the sea; before he had taken ten paces, the blue spread in front of him was roiling, swelling swiftly as he approached. Soon the waves were cresting at more than a meter,

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and the high-water mark of moments earlier was far overrun.

Perrin stopped where the footing grew wet. The second breaker after that brought water well up his thighs. That was when he started to retreat; but the tide followed, *reaching for me*, he thought, only to wince inwardly at the theatricality of it, until at last he turned and ran the rest of the way to the wall.

There, poised to keep on, Perrin glanced back. Behind him the waters were drawing away; out under the relentless sun the surface had all but calmed again. His fear dissolved, freeing his mind to focus on the problem with the orderly dispassion that the years of training had instilled in him. Yet his first speculation was pure whimsy: *What would the Soviet delegates say if I should stand up at tonight's session and offer an unadorned account of this seaside phenomenon? Suggest that I be given a leave of absence to recuperate, probably.*

And what that conjecture did was to distract him from the matter of the tide to thoughts about the mission and the people involved in it. This first contact had been awkward, largely because Ferenc Vadasz had monopolized Natasha Whatever-it-was, and the NASA interpreter had missed his plane connection in Mexico City. So the two delegations stood around smiling stiffly at each other and offering mute toasts, groping occasionally for a fractured word or two in the respective tongues ("Jheers," "Spazeebo") and wishing to hell they could break it up.

When they did after less than an hour of this clumsy dumb show, Natasha conveyed Vadasz's suggestion that they hold the first formal joint session at nine in the evening. The Russians agreed readily — "thinking," Steiner said later, "of the eight-hour break that would give them, not of what was coming at nine."

Privately, Perrin questioned that. In the circumstances it had been impossible to form sharp impressions about the members of the opposite group, in strictly human terms; but at least three of the seven were internationally recognized as pre-eminent in their respective fields. Fyodor Merkov the geologist was the one to whom Perrin had responded most favorably — in all likelihood, he admitted to himself, because that rotund little scientist from Odessa had the firmest handclasp and quickest smile of the lot, in acute contrast to the dead-mackerel look and manner of hulking astronomer Boris Kulkin or the unmistakably cold reserve shown by Isidor Palinski, the physicist just elected president of the Soviet Academy.

Palinski's name was the best

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known–generally due to the wide publicity given his inaugural address in that post, during which he spoke bitingly of "Zionist weasels who from their luxurious lairs in imperialist lands snarl and snap over imagined persecution of Jews in our beloved Soviet motherland..."

But whatever they might be in person, Perrin reflected, these were all distinguished men of science who had been sent to this remote resort on Mexico's west coast in response to an urgent confidential message from authorities in Washington. Although they could not yet know the exact nature of the disclosures their U.S. colleagues were prepared to make, they certainly understood that something of exceptional importance was in the wind and would not be apt to take it lightly.

That was Steiner's one real flaw; brilliant, dedicated, with an incisive mind that sliced through irrelevancies to the core of the matter at hand, and a formidable capacity for sustained work, he still could not resist a chance for the frivolously cynical assessment that Perrin often found disconcerting.

A touch of that came now as Steiner glanced up when Perrin walked in. "Too bad middle-class decorum requires you to wear those trunks," he remarked. "Have they ever got wet?"

Perrin let it pass. "There's a good breeze on the beach," he said.

"I'll take the air conditioning, thanks. Any more trick waves?"

Perrin was on his way to the shower. "Water just a little choppy, was all," he answered guardedly. Steiner followed him into the bathroom and sat on the toilet.

"I supprose you've heard. Vadasz is having Howard give the backgrounder. Of course, when it gets close to the marrow, he'll take over himself."

The big pressure showerhead drenched Perrin with a torrent that felt tepid in the near-arctic air Steiner had achieved.

"Well, that's about the pattern we could anticipate, isn't it?" he spluttered through the rain. Then to fend off the sudden unease that invaded him, he went on talking. "After all Howard's at least articulate (*...a great green wave... growing...mounting...rushing in*) and he was there all the way on both missions (*look down...is the water at my feet rising?*)."

Steiner snorted. "Balls! He's an all-wool fraud and you know it. The Nixon of interstellar space."

Perrin choked back a laugh. That might make the talk lag and let the fearsome images move in.

"But who could do better on that particular phase? Tennyson's tongue-tied, and Schultz would give them pure statistics."

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The issue was still absorbing them when they went out to supper. Two hundred meters down the highway the Blue Dolphin's palm frond roof wore a string of colored bulbs strung unevenly around the eaves. They had mixed seafood platters and kept the good Mexican beer coming.

"None of it suits me," Steiner said at one point. "This is something we're still exploring, not one goddamn firm conclusion to report. Why bring the Russkies in on it now? All right — that's rhetorical. They're here, we're here, wherever this is. So all that matters now is justifying the whole setup. Zack Howard won't put it on that basis. When he's through, people'll be thinking about blowing up the moon instead of how to exploit it."

And maybe that's what they ought to do went across Perrin's mind, appalling him even as he thought it.

Steiner kept on. "You should be handling it. You'd do a hell of a job. I wouldn't because every time I looked at that bastard Palinski my gorge would take over. Sending him was a frigging insult."

There it is again, Perrin reflected, *that impulsive judgment defying the reality and logic of the situation. Our own mission chief threw gasoline bombs at Soviet tanks in the streets of Budapest, but the Russians aren't complaining of his presence. Partly a racial thing with Steiner, I suppose, and part Caltech influence.* (Perrin, who was MIT, had strong reservations about the Western school's "looser" mental discipline.)

He was about to deprecate his qualifications for the backgrounding when a distant sound convulsed his throat around the words. Over his shoulder he stared across the road and the spread of dunes beyond. He felt suffocation closing in on him as the deep rumbling grew. His eyes ached, straining for the dreaded sight of water that would come heaving up terribly over the sands, the houses, engulfing them all, everything....

Far out at sea the sky flashed on and off. Long before the next roll of thunder reached them, Perrin had slumped back in his seat, dizzied not only by relief but by a sense of shamed confusion. The force of that emotional upsurge was something wholly alien to his experience.

"Mud in your eye," Steiner said casually; Perrin wondered if the trembling of his hand showed as he raised his beer glass.

Zack Howard acknowledged Vadasz's brief introduction with a wave and stayed perched on the table. His greenish cigar was a third smoked, and as always he let the ashes drop off when they chose.

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Watching him, Perrin recalled his original impression, the day the new project co-ordinator walked in at Houston and asked around a stubby stogie, "Where's the head, men?" (Tennyson understood "headman" and countered disapprovingly, "Are you looking for Doctor Vadasz?") *Somebody once told this character he looked like Lee J. Cobb, and he's been trying to live up to it ever since* was Perrin's first thought.

Now the last two Russians had finished huddling, taken seats and put on their earphones. Howard bent forward a little, fixing a portentous gaze on Palinski.

"Gentlemen, you are of course all aware from the nature of the messages exchanged between our governments that we have asked you to join us here for consideration of matters of the utmost significance and urgency."

Standing an arm's length away from him at right angles Natasha Budenina did the simultaneous translation smoothly, at a soft murmur into her hand mike. She was a tall girl, slender and svelte in a black pants suit. Her strong-boned face had just a touch of the Mongol — a damned attractive touch, Perrin mused, surprised by the sudden vigor of his response to her.

"I will summarize for you the series of extraordinary events which have led to this meeting. But first of all, let me emphasize that the information you are about to receive was excluded from our normal interchange of data, not with the intent of applying permanent classification but merely to wait until such time as we could, hopefully, offer at least a tentative explanation of the phenomena involved."

He took a short draw on the cheroot, straightened, and let smoke curl out as he added slowly, "I regret to report that we have been unable to fulfill that wish. We are deeply hopeful that with your valued collaboration a breakthrough may finally be achieved."

Perrin saw Steiner shift abruptly in his chair and sling one leg over an arm of it. *He's disgusted with Howard — thinks he's being pompous and melodramatic. But he's got the Russians' attention, all right.* Even Palinski had dropped his customary scowling indifference; a fat silver pencil was poised over the pocket notebook in his hand.

"Apollo 17, you will recall, was to have terminated our project. When an additional mission was announced, we explained merely that authorization for it had been granted in order to amplify investigation of an area which had yielded certain unusual materials of potentially great scientific interest."

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He stood up and took hold of an earlobe, massaging it with thumb and forefinger. "Gentlemen, it's quite possible that that description will become historic as the major understatement of our time. What the members of Apollo 17 mission brought back was simply five of their six radiation counters, jammed at maximum registry. The sixth disappeared into the rill from which this extraordinary radiation appeared to emanate. It was literally sucked over the lip by a magnetic force on the order of one thousand to fifteen hundred times stronger than any known on earth, as nearly as we can judge."

Perrin expected him to pause for effect, but instead he continued at once, stepping up the tempo of his speech. *Probably afraid Vadasz'll take the ball away from him if he stops running.*

"When the Congress, which had been hostile to Executive initiatives ever since the Watergate affair, balked at approving a special appropriation for Apollo 18 without receiving more detailed information on the mission's purpose, the President authorized release of a contingency fund under his sole jurisdiction. You have no doubt read of the unprecedented furor that action provoked. Even most legislators of his own party publicly denounced him for it. However, these are some of the normal risks to be encountered in the operation of a free society."

Perrin groaned soundlessly.

"As you know, the mission spent almost forty hours on the lunar surface. What you cannot have known until now is that more than eighty percent of the equipment and clothing those men had was newly designed and manufactured according to specifications worked out by our people after studying the Apollo 17 top-secret reports. Among these items was a special container for rock samples, since it was determined that normal lead shielding would be ineffective against the degree of radiation to be anticipated. I am not at liberty to name the materials used in this construction, as the government of the United States has agreed to grant a patent on the formula."

Behind Howard, Ferenc Vadasz was easing to his feet, stopping halfway up to bend toward Smythe, the NASA interpreter, and murmur something. *Ever the Old World tactician,* Perrin thought and watched to see if Howard would take the graceful exit offered him. But the co-ordinator, caught up in his narrative, was aware of nothing else.

"What I can tell you," he said, then checked himself as the people in front of him began shifting focus to the smiling tall Hungarian who

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came strolling around the table. Howard saw him and salvaged what he could, amending "— but here's Doctor Vadasz, who can tell you much more and put it all in proper perspective."

"No, no!" The mission chief reached out to grasp Howard's elbow and keep him from moving away. "I do not wish to take your place, only to add some little points." The accent was pleasantly suave, reminding film buff Perrin of Paul Lukas. "For instance, it might be of interest that where all the earlier missions had exploration assignments, new areas to examine and many different tasks to perform, Dr. Gerald Arden and Col. Frank McWhorter of Apollo 18 landed their module — Rocinante — only about seventy meters from Apollo 17's touchdown and had the limited commitment to carry on where those astronauts were obliged to leave off."

He stood half a head taller than Howard and carried himself with the elegant slight slouch very large men can afford.

"They did not have what we can call total success, but in this case to achieve anything at all must be counted a triumph, as I believe you will agree after seeing the film we are about to show you. Please."

Even Steiner sat up straight at that. There had been no advance word of the President's last-minute decision to permit screening of this, the only Apollo footage never given public transmission. It had been shown just twice previously, once aboard the recovery vessel four hours after splashdown (Perrin remembered vividly how they had all sat through those incredible scenes in awed silence) and again at the White House two days later, with a closed-circuit relay to a twelve-man audience in the Pentagon War Room.

The operators, poised for their job since the session opened, moved swiftly now. Screen unrolled, projector rolled into place, lights dimmed and out as the first color image winked into life. At the same moment Vadasz' smooth commentary floated from the darkness.

"The first experiment," he intoned while the unmanned camera offered a grainy scene of McWhorter pounding on the head of a fifty-centimeter spike held by Arden, "was planned simply to confirm their colleagues' finding in order to obtain a reasonably accurate gauge of the forces with which they were dealing. That four-pronged artifact you see on the end of the long nylon cable attached to the spike is an antimagnetic probe."

Even at this second viewing Perrin felt his nape prickle as McWhorter cautiously lowered the probe over the lip of the rill. Ten

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seconds, fifteen, twenty, twenty-three — then came that blinding violet flash like a great bolt of lightning in the same room with you; the astronaut lurching backward, one arm before his goggled eyes, still grasping the cable so that what was left of the artifact — a grotesquely twisted black strip — flew up to be silhouetted starkly against the fading glare, then came tumbling down in slow motion, kicking up a tiny cloud of lunar dust.

A variety of exclamations had sounded all over the room during this sequence, but the chief's tone was evenly matter-of-fact as he went on.

"Again we established an important point here —" (Arden appeared in the frame, straining so to reach his partner that each stride took him almost half a meter off the surface, despite the formidable boots) "— namely that the extraordinary magnetism and the extreme radiation level are directly interrelated. This is to say they are dual manifestations of a single element. Of course we could not foresee the severe reaction from contact of the probe, but happily neither man was injured."

And if someone asks where they are now? Perrin speculated. Almost seven months after returning from the mission, McWhorter and Arden were still in daily observation at Brookhaven; Captain Thiede, the command pilot, had been assigned to a McMurdo Sound station where interviewers did not turn up.

But no one asked, and the film flickered on in its eerie lighting. The astronauts conferring; McWhorter shaking his head in reassurance as Arden solicits him; the two moving forward to pick up the charred fragment of the probe. Then an abrupt cut to a close-up of Arden working on an oddly shaped instrument like double ice tongs with a large disk high in the middle.

Vadasz took up once more the thread of his account with what began to appear studied casualness.

"Now our chaps are running a final check on the negative-ion activator. This is a device designed to neutralize temporarily radioactive molecules in either igneous or metamorphic material, since we had to assume that the rocks on the floor of the rill were of one of these categories, or perhaps both. Those external arms of the activator are maneuverable vertically, laterally, and in rotation. Their purpose is to recover a sample of the neutralized material. During descent and the recovery operation the apparatus is remote-controlled, with ascent achieved mechanically."

This time it was stocky Doctor Arden, squatting twenty meters

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from the lumpy rill edge, who handled the endeavor. Holding a largish cylindrical case, its top surface bristling with buttons and levers, he sent the ungainly activator skittering toward the chasm at a close hover. For an instant the thing hung in space, wobbling slightly, then sank from sight at a rate which Perrin knew to be forty centimeters a second.

And now he sensed the same surcharged ambience there in the blacked-out room as had filled the cramped quarters aboard USS *Pierre* on that fateful day of return. It was as if some brief concession had been granted so that life could go on without breathing. McWhorter stood close beside his colleague and a little behind; the fixed stare of the camera's eye peering between them toward the rill fitted the mood of the moment.

Then the semiflexible fine cord that Arden held in one hand tautened, and both men seized it. There followed eighty-four seconds of tense suspense (Perrin was gripped by it almost as strongly as on first viewing) with the slow, infinitely careful raising of the activator. When at last enough of it appeared above the lip of the cleft so that the formless bulk of something clasped by the tongs could be made out, a ragged cheer broke from the audience, with a spattering of staccato handclaps — just as had happened on the cruiser despite the absence then of any explanatory narration, for the astronauts had at once been placed in quarantine, and no one else knew precisely what the film showed, step by step.

The rest was really anticlimactic though they all watched with close interest as the four-kilogram rock was lifted into the cumbersome container which McWhorter then sealed electronically. Vadasz said the "incalculable" hazards involved were the reason for restricting the mission to recovery of a single sample. At this point the screen went dark and the lights came up.

"And that sample, gentlemen, has since been subjected to the most exhaustive tests and analyses under the widest variety of conditions ever produced for such an undertaking. Yet all we know with certainty today is just what you have already heard: that this material which is similar to igneous earth rocks but contains mineral substances not found on this planet, exudes radioactivity in excess of that emitted by two and one half tons of plutonium —" he paused to let Natasha's translation provoke the incredulous stir he had known would come "— and at the same time possesses the most powerful magnetic force ever discovered by man. Indeed, we have at present no adequate quantitative

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terminology with which to express that force. It is quite simply immeasurable."

He reached for the pitcher on the table and poured himself some water. Perrin looked quickly around the room. Four of the Russians had their heads together in earnest converse. Of the top scientists only astronomer Kulkin sat aloof, glowering. Schultz was talking energetically to Steiner, who looked uninterested. Tennyson stood by, listening. As Perrin turned back toward Vadasz, his eyes met Natasha's. For perhaps two seconds that seemed much longer their gaze locked and held. Her full lips pursed ever so slightly in a provocative little *moue.* The encounter stirred him to frank desire, with none of the confused reticence he usually felt at the least suggestion of contact with an unfamiliar woman.

"You will I am sure have many questions," Vadasz said, raising his voice above the subdued hubbub. "Some we may be able to answer fully, others in part, and a number not at all, I am afraid. But that is why we have asked you here. Possibly with a free exchange of thoughts and information among us all we will be able to achieve what Mister Howard referred to as a breakthrough, or at least find a way out of the cul-de-sac in which we are confined at present."

Colin Smythe, the British-born NASA interpreter, had taken his place alongside Natasha. Abruptly Kulkin lumbered up, raising an arm. In a rasping monotone he began to deliver what had the sound of a harangue rather than an inquiry. After half a minute of it Smythe held up a hand to check him. There was a momentary whispered consultation between the two translators, then Natasha passed the microphone to the man.

"Doctor Kulkin wishes to offer a personal observation. He states that he cannot fail to note an elapsed time of more than thirty months from the return of Apollo 17 to this date, during which period all information on the matters under consideration here were maintained in complete secrecy by the United States government."

From the moment Kulkin had launched on his fulmination Perrin saw Fyodor Merkov and Yaganovich, one of the Soviet lesser lights, move in to speak urgently to Palinski, Merkov in particular displaying patent exasperation. But the Academy president, impassive, waved them both aside as the astronomer rumbled on.

"Doctor Kulkin further wishes to pose an hypothesis," Smythe continued when he had a chance. "Is it not possible that the United States has withheld these data until now in order to provide its scientists

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an opportunity to develop military application for this source of unprecedented radiation, and perhaps for the reputedly unlimited magnetic force as well?"

Response among the host group ranged from Vadasz's coldly contemptuous smile to a derisive snort by Steiner and Schultz's explosive "What twaddle!" Perrin had a sudden personal fantasy: Standing on the shore at twilight, he lifted both arms wide in imperious summons, and the sea rose towering above him while Kulkin and Palinski ran screaming in terror from their inevitable doom.

Angrily he shook it off, sensing that what disturbed him most was the grim core of fact on which his wild vision centered. Then the chief was beckoning him, and Perrin responded gladly.

"Since our distinguished friend of the Soviet delegation has characterized his question as hypothetical," Vadasz said smoothly, "I would suggest that we pass over it for the moment to concern ourselves with more directly practical queries." (As Natasha rendered that into the mike Smythe held for her, Merkov nodded his satisfaction.) "And now in order to ensure that what you seek to learn receives the most authoritative attention, I shall turn you over to Doctors Bartholomew Perrin and Aaron Steiner, who directed our studies of magnetism and radiation, respectively."

Steiner sauntered up, his expression suggesting that here at last was a prospect he relished. Perrin and Natasha looked at each other again for an instant; this time both smiled, an invitation and a promise. An immense elation possessed him as he faced the visitors, three of whose hands were already up.

In a sense Bart Perrin might be said to have been preparing since childhood for his unique omnipotence. A mirror-reversed Mitty complex possessed him from the age of earliest memories, spawning baroque fantasies of limitless power employed for malevolent ends. When he was six, a girl cousin, three years older than he, fainted after being locked by Bart in a shallow wardrobe for more than an hour; his explanation was that she had "tried to make me feel bad." At eight, they sent him home from school one morning when the pupil in the seat ahead complained hysterically of being subjected to unending muttered imprecations in some weird tongue. Precocious Bart, who had discovered Orwell, said it was Newspeak, and he employed it because the boy in question "wasn't thinking right."

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Eventually these eccentric excursions into esoterica eased off; rather, the social sensitivity that came with adolescence suppressed them into a diffident reserve and a concept of human behavior patterns that Torquemada would have sanctioned. His relationship with his mother (the parents had divorced when Bart was four) evolved from excessive dependence to a hate-love syndrome which perched upon his psyche like a vulture, inhibiting every contact with other females during what should have been the period of normal heterosexual development. In fact, he was in his junior year at MIT before he knew what it was to have a woman, and that first experience avoided total disaster only because the little baggage at the Boston cathouse where some classmates took him to climax an evening on the town was skilled, infinitely patient, and had an uncommon sense of humor.

If college life drew Perrin part way out of his cocoon and introduced him to what were in his case the modest delights of copulation, it put no check on his secret conjurings. Their patently sadistic character never surfaced in overt action, from puberty on, but the degree of imagined savagery heightened with the years. Thus, during calculus, he would summon up a vision of himself feeding the somewhat supercilious instructor into a computer's maw, or spread-eagling on an especially ingenious torture rack the little Ohio bitch who had snubbed him at a beach party, then raping her relentlessly while she writhed in agony. He could afford such tangents because he had frequent spurts of pure genius when the most complex equations resolved themselves instantaneously in his mind while those around him were mounting ranks of figures on their foolscap.

Outwardly he was passive to the point of complete neutrality. ("The blank square" a campus wag dubbed him, and it stuck.) Ingrid Shriana was the one person who found Bart's noncommittal personality fascinating. The daughter of a Norwegian nurse, Ingrid bore the surname of the Iraqi physician who had seduced her mother aboard the international hospital ship on which both served. (Learning of his conquest's pregnancy, Dr. Rashid Shriana thoughtfully dropped just outside her tiny stateroom a photo taken the year before in Baghdad, showing him with his wife and four of their six lovely children.

When the girl was three, Margriet Andersson joined the staff of Boston General where in a remarkably short time she became deputy administrator. Ingrid, a

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moon-faced girl with a swart-over-sallow complexion and wide-set hazel eyes, took early to the flute. Her rather uninspired competence with that instrument eventually got her a scholarship at the New England Conservatory.

She and Perrin met during the 1966 Tanglewood Festival to which he, no profound music lover — his favorite "classic" was "Trees" — had gone because it offered an easy way to pick up some needed extra credits. They went to bed together at his motel after the third concert; from that hour forward she fastened herself around him like a delicately antiseptic albatross.

In time Bart developed much the same sort of ambivalent attitude toward Ingrid that he had come in late adolescence to feel for his mother. Her dogged adoration flattered him, but he felt trapped by it — and was. She gave, and experienced, minimum sexual satisfaction; yet he had confined himself to their relationship, as much for lack of initiative as anything else. Actually the attraction that Natasha Budenina exerted on him was both unexpected and singular; in five years of Ingrid he had neither sought nor consciously thought about another woman. But what really startled, then elated him was the Russian girl's ready response. All during the eighty minutes of exchange with the Soviet delegates, following Vadasz's introduction, Perrin was acutely aware that she kept her dark eyes on him whenever he spoke. Smythe did the interpreting, with Natasha on stand-by.

"Has the sample been brought here?" Merkov asked after more than half an hour of largely technical inquiry. Bart wondered that it had taken so long to come. Now he deferred to the mission chief; Vadasz smiled.

"Certainly. We constructed a special transport case, of a new acrylic derivative, to permit viewing of all surfaces. Obviously the substance cannot be handled except under elaborately controlled conditions."

If you only knew, Perrin mused as he waited through the translation, flawlessly Slavic in tone and structure yet glossed with a faint flavor of Cambridge. He had an indelible recollection of his secret experiment that night three months earlier: the meticulous preparations, alone in the laboratory at three a.m....changing to a metal-free smock...putting the negative-ion activator into play between himself and the container... reaching out slowly to undo the clasps, then lift the lid...taking into his own hands — the first bare hands ever to touch it — that strange and fearsome rock which had defied the foremost scientists of the world's most technologically

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advanced nation...feeling the cragged texture of its indentations, the glassy flat surfaces....

Four Russians were on their feet as Smythe finished; again the voice was Merkov's.

"We wish to see it, please." Vadasz had anticipated him, sending out two of the manual assistants even while the interpreter was speaking. They brought the transparent case in a moment later, and with that all else was put aside. In total silence the men from Moscow clustered about the table on which the moon fragment had been placed, as the U.S. group stood aside to let them get their fill of it.

"What did you think?" Bart asked. He was indulging in a bad-mannered habit, cutting his food — in this case crayfish Creole — into bite-sized pieces before eating any. Natasha, sipping her margarita, gave no sign that it displeased her. She studied his face with a faintly quizzical air as he bent over his plate, engrossed in the food operation. But the question brought a smile and a small shrug.

"'Think?' If you mean to ask my opinion of what was said tonight, you have come to the wrong person. It is my task to understand exactly, in both languages, all the terms that are used — but this does not signify that I also perceive the true sense of them. As Chairman Khrushchev used to say — we are no longer supposed to quote him but it will be all right here — 'a parrot is not an owl in holiday dress.'"

Perrin gave a little laugh. It had a forced sound, and he knew it. He was tense in a contradictory way, with part of his senses on a pleasurably excited level because of the girl and what could be hoped for later, part mired in dark anxiety. It had come to him like a revelation, there in the salon when they began to talk again and the questions turned upon the rock's awesome magnetic force, that he could not indefinitely hide away the fact of his own phenomenal powers acquired from it.

Now he looked across at Natasha, asking himself *And if I should tell her?* The speculation raveled out in a tangle of contingencies he couldn't cope with all at once. There was evidently no silent communication between them just then; the girl leaned forward so that the muted amber lighting of the little bistro set her hair aglow and said softly:

"Perhaps, though, you wanted only to ask what I am thinking at this moment. That I will tell you. I am seeking in myself to know why I feel so very drawn to you. It is extraordinary — something I have never experienced. Almost, it

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makes me afraid, and fear I am not used to."

Even as the impact of it stunned him, he was aware that for the first time since they met she had formed an awkward phrase. The tautness he saw in her cheek hinted why, yet he was flooded by confusion and could find no immediate response. What overwhelmed him, more than all that had gone before, was an implication so electric, so without precedent in the entire history of ordered reasoning, his mind simply boggled at it. Magnetism — all magnetism, animal and mineral, physical or intangible — from the same source? This, this could stand alone at the crest of the century's incomparable discoveries, dwarfing nuclear fission...heart transplants... even space exploration....

Just in time Bart realized that she was stiffening away from him, taking his blank silence as a rebuff, reaching for utensils.

"You're a beautiful woman, Natasha," he managed. "There must be a lot of men always trying to make it with you. I'm really bowled over that you should...find me attractive."

She held a forkful of salad poised above the dish and frowned at him. "'Make it'? 'Bowled over'? What are these idioms?"

He laughed again, and this time it was easy, natural. Her perplexity gave him back that perverse confidence Perrin felt whenever it seemed he had bested someone, anyone, about anything.

"What I'm saying, dear lady, is that a great many men must be drawn to *you,* and that I am very flattered by what you just said."

Clearly reassured to some degree, she still darted him a challenging glance. "Flattered. Well. Nothing more."

In some obscure fashion everything had come together for him. The uncertainty, self-doubt, even the astonishment prompted by that incredible inference — it all resolved itself, and he was, really for the first time in his private life, master of a situation.

He bent toward her, his eyes very steady on hers. "Nothing more? Natasha, I have been so utterly enchanted by you it's a damned wonder I got through this evening's work at all."

Strong words, bold — the boldest spoken to a woman since the night fourteen years gone when he had shouted at his mother "Go to hell!"

Natasha reached across to take his hand in hers, press tightly and hold fast, the smile an ivory radiance. And that was the precise instant when Perrin made his choice. There was no thought-out decision; it just came to him in one flaming, exultant surge that the power he had taken from the moon

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was his, not to be shared or explained to anyone but to be used as he, its sole possessor, might determine...

He drove the rented Japanese sedan a kilometer and a half north along the highway that paralleled the beach, but when he turned off, it was onto an unlit dirt road that led away from the sea.

She had sat still and close beside him; now as he stopped she came into his arms with an ardor he had never known, an offering of herself that was not mere surrender but a sensuous fulfillment.

Vadasz accepted another of Merkov's grayish cigarettes, then held his lighter for both of them.

"Is there something we can add at this time?" the Hungarian asked. Smythe rendered it for the benefit of Pavel Ochorny, the surprising mathematician from Kiev who had come up with the night's most provocative observations. ("A real sleeper, this type" Steiner commented in a *sotto voce* aside to Vadasz.) Six of them, including the interpreter, had got together in the mission chief's suite for an informal assessment of the full session. They had quickly learned that of the two Russians present, only Ochorny needed translation. Paul Tennyson, who was hyper-security conscious, kept worrying, after Merkov unexpectedly said something in better than serviceable English, why the man had withheld that linguistic capacity, and why he was revealing it now.

Nobody else troubled himself with that small enigma, and Tennyson never resolved it.

"I believe we have gone as far as we are able for now," the Soviet geologist said. "But I do think the central conclusion we have reached among ourselves here must have first priority with us all tomorrow."

The assent was general and Vadasz said, "Good. In synthesis, then, what we propose is that since empirical evidence so strongly suggests that Lawrence Rill may be the elemental, and possibly the single source of the Moon's influence upon sea tides on earth, our two governments should set about planning a joint mission designed to explore that hypothesis exhaustively, at the scene. Have I expressed the sense of our accord?"

Again the response was uniformly affirmative. But then Ochorny raised a hand. "I would only wish to append as a footnote my regret that we were deprived during this consultation of Doctor Perrin's presence, inasmuch as magnetism has so clearly become our prime focus."

Vadasz made a deprecatory gesture. "*Mea culpa.* Due precisely to the emphasis you mentioned,

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Doctor Perrin carried the burden of our inquiries earlier this evening, and so when he asked leave to do a bit of night-lifing, I granted it readily. We shall of course see to it that he is on hand for all future discussions."

Natasha stirred, brushing her freed hair against his skin, and Perrin roused from reverie to cup a hand over one of the exquisite upthrust breasts. As if he had called to her, the girl raised herself until he could take the firming nipple in his lips. As his tongue caressed it, she moaned her joy and clung to him. Then, effortlessly, she slid upright, facing him, and spread herself to give him entry. Their mouths fused as their bodies joined; and this was their finest coupling....

They walked together up the narrow road, across the highway. The beach, dark and formless under a lightly clouded sky, lay a hundred meters ahead. Hearing the gentle surf, Perrin felt his pulse quicken. Now she would learn what he really was; now she would sense without fully understanding (for he would tell her nothing) why he was irresistible — more potent than all other men.

A dog set up a desultory yapping nearby as they picked their way along a strip of sand between villas. *And this will be only a dry run* — he savored the irony of the adjective — *for the main event, the moment when I lead loving goddamned adhesive Ingrid onto some Gulf strand and bring the waters up over you, you plump partridge of a floundering female who, thank god (the other god), never took swimming lessons either...*

They stepped out onto the beach, and just then a vagrant high breeze began to scatter the clouds. Natasha had not spoken since they left the car; her hand lay curled in his. But when the moon, only a night short of full, broke through the scudding overcast to light up the waters in front of them, she took a firm clasp, crying, "Oh, come! Let's go in as we are!" and started forward, pulling him along.

The terror was not a growth — it enveloped him all at once, as a violent chill. Congealed by it, he dug his heels in and wrenched free of her, just short of the water's edge.

He had a fleeting glimpse of her moonlit face turned toward him as she raced in, but he could not read it. There was no time; the great wave began swiftly to shape itself. He cried out to her. It was a strangled croak.

The breaker mounted higher and higher, catching the moon-beams on its flank. She saw it and plunged on to meet it, arms

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outstretched, head lowered, as she had so often met the capricious seas on the shore of her native Sukhum while training for the all-Georgia long-distance competitions she had won four times.

Now Perrin stood transfixed, staring upward at the bright mottled orb. The only thought left in his numbed mind was *That is my home...I want to go home.* Then suddenly the mighty wall of water bottled it from sight....

Natasha had dived deep within the towering monster. Far off she heard the thunder of its fall that shook the sands beneath her. The tremendous wave washed to the lintels of houses standing fifty meters back from the highest water mark previously known there. When it commenced to recede, Natasha Budenina stroked her expert way out. There was no one on the beach.

Shivering, spent, she sank to the brown sands and wept. Dimly, without understanding, she sensed why Bartholomew Perrin had been irresistible.

She knew, too, that they would never find him.

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Dr. Tushnet's new story concerns a successful attempt to create an enemy for mans best loved machine, the automobile, and the struggle for existence that follows.

Waves of Ecology

by LEONARD TUSHNET

The meter maid noticed the little green stencils, FUTURE TREE, while she was checking the cars parked on Floral Boulevard in Gordonia, an enclave in the San Fernando Valley section of Los Angeles. At lunch she asked her fiance, who was in the Department of Public Works, what the signs meant. He shrugged. "I dunno."

The next day, curious and as usual bored with his sinecure, he drove up and down the boulevard. The stencil appeared every fifty feet on the sidewalk near the curb. He asked his supervisor who had painted the signs. His supervisor grunted, "Not us. Probably the Commissioner of Parks and Public Property has some wild idea of beautifying the city. Election time's coming up."

His opinion that the planned trees were an absurd political move was shared by others. Concerned Taxpayer wrote a letter to the *Herald* in which he said, among other things, "To expect trees to grow on such a busy thoroughfare, exposed as they would be to gasoline fumes, is an example of how the present incumbents think. The exhaust gases will kill the trees in a couple of weeks. All that would be accomplished is an expenditure of money the city can ill afford..."

The Commissioner of Parks and Public Property saw the letter. He hadn't authorized the tree planting but, "What the hell!" he thought. "If all goes well, I'll get credit. If not, then I'll raise Cain about somebody exceeding his powers." Privately he told his secretary, "I think the mayor's got a deal going with some nutty ecology group. Maybe like the crazies who want the city vehicles to go around with dichondra growing on their roofs. 'Keep California Green' nuts." He snickered. "The best way to keep it green is to bring money."

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Work went ahead on the trees. A squad car, responding to a complaint about unnecessary noise from a record shop on the boulevard, found a green truck with a crew busily ripping up the sidewalk with pneumatic hammers at one of the stencils. The truck bore the sign GORDONIA GREENERIES. The workmen wore buttons reading "Employ the Handicapped." They were deaf-mutes. The policemen tried to tell them not to work during business hours, but they got nowhere. They hesitated about giving them a citation for fear one of the municipal judges might make a big publicity play about that. By the time they decided to shift the responsibility by a call back to the station house, the workers had finished the block and had moved to the next, in another precinct.

The actual planting of the trees was done in early February, accompanied by the jeers of knowledgeable bystanders. "Just look at those dry sticks and those puny branches!" one said. "And those tangled roots!" said another. "That tree doesn't have a chance. Even if we do get rain this month, the sun's too hidden by the buildings on the boulevard. I'll bet it'll never even put out a leaf."

But February had rain alternating with warm California sunshine. The trees put out tiny leaves that grew rapidly to cover the branches. New branches appeared. By the beginning of April wee pink flowerets began to show. The teacher of the second-grade nature-study group at Juniper School wrote to the Commissioner of Parks and Public Property asking what kind of trees they were. The commissioner passed the inquiry down to the Shade Tree Supervisor. He in turn sent a branch with leaves and flowerets to the County Agricultural Station.

The County Agricultural Agent, unwilling to admit his ignorance, reported that the tree was a variety of flowering crab apples. "Who'll contradict us?" growled the agent. "A variety can be anything."

The flowerets dropped off, leaving behind small globules that grew so fast that by the middle of May they were almost the size of apples. The fruit was a brilliant scarlet, striped with yellow. The glossy green leaves and the colorful fruit gave Floral Boulevard the appearance of an orchard.

Some adventurous boys picked the fruit. It was hard as stone, but they cut and pounded it until the rind gave way to expose large tan seeds like pods. "Is the fruit edible?" one woman phoned in to ask the office of the Commissioner of Parks and Public Property. "No," was the reply, on the ground that a negative answer was the

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safest. But the commissioner, worried about the elections and the possibility of a child being poisoned by the fruit, ordered his secretary to check with Gordonia Greeneries.

Gordonia Greeneries did not exist. At least, according to the telephone company, it had no phone. The commissioner frowned. He had a private conference with his buddy, the Commissioner of Public Safety. In the next week, the squad cars patrolling the city rode up and down side streets and alleys. No Gordonia Greeneries.

The two commissioners recognized an underhanded political trick. They demanded a private special meeting of the City Commission and the mayor. To their surprise they found that neither of the other three commissioners nor the mayor had anything to do with the planting of the trees. A cut fruit lay on the council table before them. Deep yellow striations ran from stem to base but the rind was still hard. The pods were now larger and a deep brown in color. "What'll we do?" asked the mayor. "Try to get some advantage out of this," answered the Commissioner of Public Health. "Let's mobilize all sanitation workers, firemen, policemen, health inspectors, and school bus drivers. In one day we ought to be able to pick all the fruit. Who knows what'll happen when it ripens and falls? It could stink like gingko fruit, or poison pets or kids, or attract flies. We have to get rid of it at once." Agreed.

Easier said than done. The union leaders had to be cajoled, wined and dined, and given honoraria for consultants' fees (not bribes!) before they consented to order their members to co-operate. The rank and file members grumbled, threatened wildcat strikes, and gave in only after they were promised double time for the unusual task.

The harvesting of the fruit was set for Sunday, June Fifth, when most of the businesses on Floral Boulevard would be closed and the fruit pickers would be unimpeded by traffic.

They never had a chance to pick the fruit. On June First, about midnight, the citizens living along the boulevard were awakened by what seemed like a series of small backfires. They rushed to their windows. One reported, "Each one of those red apples like swelled up like a balloon and all of a sudden, pop! — the balloon burst and those brown seeds fell all over the ground. There's a streetlight right by me, and when a car went over the seeds, a yellow powder like came out."

The pods covered the pavement and the adjoining gutter. By nine o'clock they had been swept into

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the street by the storekeepers on Floral Boulevard. Some pods had been crushed by the few pedestrians passing that early in the day; the yellow powder was flushed off with difficulty. The yellow slurry that resulted from contact of the powder with water was extremely tenacious, almost gluelike in consistency.

Traffic on the boulevard was very heavy because the most recent earthquake had cracked part of the Ventura Freeway, so that vehicles had been diverted onto the length of the boulevard until the next approach to the freeway. By ten o'clock most of the pods had been pulverized by the passing cars and trucks. At elven special street-cleaning crews went into action by order of the Sanitation Department. They washed down the streets. The job was not easy because of the viscidity of the mixture of the yellow powder and water. At four o'clock, when the crews went off duty, stray globs still remained here and there on the street, but the traffic eventually wore down those globs by attrition.

The executive committee of CAP met that evening. "Well," said the chairman, with a smile, "Phase One of Clean Air Project is over. Now we wait for the late news." The agrochemists, botanists, and environmental engineers grinned at each other.

The news they were expecting came almost as an afterthought on one station and in the final so-called human interest section at the end of the others. "The AAA was swamped by an epidemic of flat tires this morning...The Highway Police announced that abandoned cars will be towed away at the owner's expense...Garage men and gas stations were overwhelmed by the demand for new tires...A record number of accidents caused by blowouts was reported. Fortunately because of the very slow speed at which cars were moving due to the tie-ups there were no fatalities and only minor injuries..." One mathematically minded commentator pointed out that the outbreak of flat tires, while unusual, was not inconsistent with the theory of probability. "What is peculiar," he said, "is the skewed nature of the curve. A quick survey of the affected vehicles indicates that they (except for a few instances) came from the Valley communities served by the Ventura Freeway."

The TV sets were switched off. Dr. Schonberg, the originator of the project, whistled and shook his head. "Too soon. It will take another four months before the next fruiting in Gordonia. We can only hope no one follows up that man's intuitive guess."

"Perhaps we ought to recruit him?" suggested Dr. Verde.

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The chairman said no. "We'll have to take a chance. Now that we have had a successful field experiment, we can proceed with Phase Two."

No one paid attention to the green trucks bearing the stylized tree emblem and the Bear State insigne except to grumble as they had to shift lanes. The silent workmen planted their trees along the borders of the Ventura Freeway and then did all the others, the San Diego, the Golden State, Santa Monica, the Hollywood, the San Bernardino, and the Harbor Freeway. They ran out of trees halfway down the Santa Ana Freeway. The trees were spaced fifty feet apart; where overpasses and bridges provided no soil, the trees were deposited in large redwood planters. The trees rooted quickly in the summer sun and required no watering except that routinely provided by the Highways Authority. Pink flowerets appeared and then the fruit. Because of the time lag between plantings, by the time one set of trees had dropped its fruit, other sets were just beginning to bud. Summer speeded up the plant metabolism. Time from flowering to dropping of the fruit was only three months.

The daily users of the freeways took the beautiful display in their stride (or ride). They were too intent on getting where they were going. Tourists exclaimed at the gorgeous colors and wrote letters to the newspapers complimenting Los Angeles for its civic enterprise in changing jejune highways into aesthetic joys.

In city hall, in the county offices, in the Roads Department, in the Motor Vehicle Division, no one knew who had authorized the plantings. But no government body refused to take the bouquets being thrown at it instead of the customary brickbats. As long as it did not have to pay the bills, it kept quiet.

The bursting of the fruit and the subsequent spreading and crushing of the pods on the concrete of the freeways caused no concern. Some of the yellow powder was blown to drift on city streets but, there, was quickly picked up by the tires of passing cars. The various governing bodies had troubles other than the trees.

The accident rate on the freeways was rising alarmingly. Tie-ups became so frequent that motorists began to abandon the freeways for the city streets, discovering that in the long run they saved time. Traffic engineers held emergency sessions. They recognized the seriousness of the situation but were baffled by the irregular pattern of the tie-ups. Congestion on the city streets

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increased to such an extent that parking on the major arteries was forbidden at all times so that the flow of traffic would not be impeded. Parking lots overflowed. Businessmen complained. Ingenious drivers found ways to avoid the regulations by using other streets. Then parking on any city street was prohibited.

The public outcry was directed at the traffic authorities and at the tire companies for their shoddy merchandise. The former developed ulcers from frustration but found no solution to the problem. The latter excused themselves by pointing out they had no trouble with their tires elsewhere in the United States. But they did increase their R&D departments. They soon found out that in the Los Angeles area both natural and synthetic rubber used in tires ceased being amorphous and was converted into a semicrystalline substance worthless for the uses it was intended to provide.

The executive committee was disappointed at the slowness of the response. Dr. Grundorfer expressed the general opinion. "They're just attacking the problem ass-backwards. I suppose we ought to be glad that they haven't yet found the cause. Nevertheless, by this time I expected definite social and demographic changes."

"Phase Three can't be started yet, I admit," sighed the chairman. "And the longer it's postponed the greater is the danger of discovery. We'll just have to wait."

"There's a bright side to waiting," said Dr. Schonberg. "Our hybridization and genetic change experiments are beginning to show results. We're near to having the trees fruit in climates colder than California. What would be the use of our project if it were confined to the southwestern part of the United States?"

"How long do you think we have before some bright boy in the government will put two-and-two together?" asked Dr. Horetz.

The chairman shrugged. "Allowing for the very remote possibility that some agency has employed a person with a scientific bent, four months at least. By that time we should see definite changes."

The chairman was right. Intensive investigation was undertaken to determine the cause of the rapid deterioration of the tires. It was attributed to the high acid content of the smog by some, and to faulty aggregates in the concrete pavement by others. Research in those areas leading nowhere, experiments were done on the effects of nitrogenous waste products and photochemical oxidants.

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And when those experiments were equally fruitless, there arose a growing conviction that sabotage by disgruntled elements in the rubber factories was the cause. Some wild extremists talked about the existence of an un-American underground conspiracy directed against the conservative citizens of California. The conspirators were said to spray a mysterious chemical on the freeways during the night. Bands of volunteer vigilantes set up posts on the freeway. No one thought of the trees.

Six weeks later the situation on the freeways had become so chaotic and the traffic in the city so heavy that a large industrial enterprise announced a new hiring policy. Because of the lower production level stemming from absenteeism due to transportation problems, the firm said that henceforth it would hire only those workers who lived within two miles of the plant, a reasonable walking distance. While the novel case of territorial discrimation was being fought in the courts, several other companies found a different solution. They provided free bus transportation from as far away as Orange County and San Bernardino for their workers. That was of little help because the buses shunned the freeways and used the city streets only.

The City and County of Los Angeles, alarmed by the possibility of the flight of industry from the area, instituted a crash program for the construction of the long-delayed rapid transit subway. Japanese experts were called in, given adequate funds, and told to get to work.

Motor-driven vehicles, including trucks, unable to use the freeways, turned to the streets. They became so clogged that often a man could walk faster than a car could go. Bicycle riding increased. Bicycles were maneuverable for individuals but of little value for moving goods. The rush to horse-drawn transportation was started by a large brewing company which said it could no longer afford the great expense of tire replacement. People recognized the statement as merely an advertising stunt, but nevertheless the idea caught on. Large wagons made good time on the freeways. Teamsters got paid more than truck drivers. Next came the return of carriages and hansom cabs. Young bloods preferred riding their own horses. The San Diego Freeway from Mulholland Drive to Wilshire Boulevard became a veritable Bois de Boulogne with trotters and cabriolets bearing fashionable ladies with parasols. Strivers and arrivistes vied with each other in the elegance of their conveyances. Livery stables sprang

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up all over Los Angeles. The parking meters were used as hitching posts. Organic gardening got a big boost from the abundance of manure available.

Dr. Schonberg was pessimistic at the next meeting of the executive committee. "We didn't expect this. The computers predicted decentralization, not a return to horse-and-buggy days."

The chairman laughed. "Our programming didn't take into account human ingenuity. Let's face it. Cities, metropolises like Los Angeles, are part of our civilization. They have enormous advantages over what Lenin called the idiocy of rural life. No one would willingly give up those advantages without a struggle. Horses are only a makeshift, a passing fad. What counts is that individually driven automobiles will soon disapear completely, to be replaced by mass urban transit. And since 90 per cent of the smog is caused by automobiles here, the air will get cleaner and cleaner. After all, that was the major goal of our project, wasn't it?"

Dr. Villanova, the treasurer, was worried. She was an economist. She said, "If the computers were wrong in one direction, they may be wrong in another. Perhaps the whole industrial and commercial structure of the country will be damaged by this local change in ecology. I know we planned to finance CAP by buying up tire company stock during the initial phase, selling it for a quick profit, and then selling the stock short. So far we've been very successful financially. But we may have been too short-sighted. What about the rubber workers in Ohio who are unemployed? And the shutting down last week of Kelsey-Hayes and other auto-parts makers? And the layoffs in Detroit?"

"And what about Los Angeles itself?" added Dr. Nittunkel. "Buses can't use the freeways, and we can't plant trees on every street and byway in the city. Traffic goes so slowly now that staggering of work hours will certainly follow, and that means more night work with its consequent neuroses and disruption of family life."

Dr. Grundorfer nodded. "We tossed a pebble into the center of the lake, expecting it to sink without a trace, but we didn't count on how the waves spread in every direction. Decentralization was what we hoped for, not further urban glut."

The chairman remained sanguine. "I'm sure all will turn out well as soon as the subway is opened. I've seen the plans. It will combine the best features of the Paris Metro, the Moscow subway, and the London Underground.

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Superfast quiet comfortable trains, express and local service, escalators so that no one will have to walk more than a few steps, and so laid out that anyone in Los Angeles can get to any other part of the city in less time than it formerly took on the freeways. And with no contamination of the air and with no loss of life or limb in accidents."

"But truckers can't use the freeways, either," Dr. Villanova pointed out. "And the railway system is too archaic to take up the slack. All we've done is transfer pollution from the freeways to the streets. Horses can never take the place of trucks."

"That's where American inventiveness will take over," said the chairman. "Now we'll see a spurt in research on other than internal-combustion engines. I foresee that in a year the first electrically driven truck will be commercially available."

In spite of his confident remarks, the committee voted to postpone the projected plantings elsewhere for another six months.

The chairman was right and was wrong. The completed subway became one of the wonders of American technology. Los Angeles residents boasted of its efficiency. No point was more than half an hour from any other point, incredibly faster than the previous travel time on the freeways. Used automobiles began to be sold in such quantities in the Los Angeles area that their price was depressed in the rest of the country. Even the poorest family in Appalachia could now afford a car, with the result that traffic congestion and air pollution increased in all but Los Angeles at a fearful rate. Furthermore, the availability of such a cheap form of individual transportation speeded up the flight from the central city cores to the surrounding suburbs and countryside. Then followed the spread of trucking goods and food to the urban sprawl, and inevitably the building of new highways to expedite traffic.

The air in Los Angeles was once more breathable. Eye irritations, asthma, bronchitis and emphysema diminished to such an extent that some specialists in those disorders turned to geriatrics because people began to live longer. Unfortunately the morbidity and mortality rate in the rest of the state and country went up more than enough to cancel the improvement in Southern California.

The executive committee read the accumulated statistics with dismay. They put off all plans to plant more trees for two years until they had ample time to digest the data and communicate their

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findings to the general membership.

The freeways were deserted. Grass grew in tiny cracks, splitting the pavement. But since man, as well as nature, abhors a vacuum, a demand rose that all freeways be opened to pedestrian and horse-drawn vehicles. The Highway Authority acceded to the demands. For a few weeks hiking enthusiasts, joggers, and just plain strollers used the freeways, but when their sneakers and rubber-soled shoes gave out after a mile or two, they went back to their former routes.

The freeways again became empty of all but commercial wagons with metal-rimmed wheels.

While CAP was reprogramming its computers for a more thorough-going prediction of the results of nationwide planting, an intelligent high-school student from Encino undertook a special-credit project in inductive logic. He gathered all the data available from various governmental and industrial research agencies having to do with rubber deterioration in Los Angeles. He arranged his facts: a,b,c,d,e...for time of onset of the tire trouble, age of the freeway, type of cement and concrete used, and so forth. He came to the conclusion that the trees had something to do with tire destruction. A few simple experiments, and he had the answer. He showed without question that the yellow powder released when the pods were crushed destroyed both natural and synthetic rubber.

Like Columbus's egg, everyone said, "Of course!" Aided by a generous grant from the automobile industry, the Highway Authority uprooted and destroyed every offending tree.

The freeways were again opened to motor vehicles, but traffic changed its character. Only a few individuals used the freeways; most preferred the convenience, safety, and lower cost of the subway. The freeways were used mainly by truckers, school and chartered tourist buses, and ambulances. Draft horses again became a rarity.

The convenience of fast truck transportation, now that private cars no longer got in the way, gave an impetus to the development of industry in the farthest reaches of Los Angeles County. Efficient lobbies, using ecology arguments, succeeded in having the freeways closed to all but commercial traffic. Slowly, slowly the air once more became polluted.

CAP was dissolved. "It was fun while it lasted," said the chairman in his final speech, "but it didn't last long enough. One thing I've learned — the Lady Bountiful technique of doing good to others doesn't work with ecology. People have to want the good to be done to them for results to be permanent."

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THE UNETERNAL ATOMS

I have recently returned from the 31st World Science Fiction Convention, held in Toronto. It was a thoroughly satisfactory experience. The hotel (the Royal York) was splendid; the program was efficiently handled; the attendance was over 2500; and, best of all, at the Sunday night banquet, it was announced that my novel, "The Gods Themselves," had won the Hugo.

By the end of that particular day, you can well imagine that I was feeling very happy as I stepped into the elevator to go up to my room.

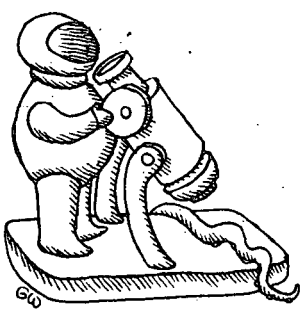
In the elevator were present four people. Two were strangers who were dressed in suits, ties, and tight collars, with glistening new-reaped chins, short hair, and solemn expressions of intense respectability. The other two were fifteen-year-old science fiction fans who had the young and innocent fuzziness of the species.

Unfortunately, although I am somewhat over fifteen years of age, I did not look very respectable, myself. I was cold sober, of course, despite provocation, but at the end of the day I tend to have a kind of rumpled look.* Furthermore, my

**At the beginning of the day, too.*

ISAAC ASIMOV

Science



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leonine shock of long and graying hair was in more than usual disorder.

As soon as I entered the elevator, one of the strangers said, with what seemed to me to be a glint of disdain in his eye, "What's your club?"

At once the fifteen-year-olds cringed. I knew what was passing through their minds for I had been there once. They were going to be made fun of and humiliated by respectable people who thought science fiction was half-wit nonsense.

With an inner sigh, I assumed my Establishment intonation (which I can manage, with a modicum of effort, though I much prefer to speak my native Brooklynese) and said, "To what, sir, are you referring?"

"What's that?" he said, pointing to my Torcon II button.

"That," I said, "means that I am attending the 31st World Science Fiction Convention, which is the second of its kind to be held in Toronto; hence Tor-Con-Two."

"Science fiction?" There was a small, tight smile on his face. "What can you possibly do at science fiction conventions?"

I said, "We listen to speeches and panel discussions; we discuss the state of the art among ourselves; we hold a costume party; we introduce notables; we attend a banquet; we hand out coveted awards. In short, sir, science fiction conventions are just like other conventions, except, of course, that those who attend science fiction conventions are *much* more intelligent than those who don't."

And with that, leaving two satisfied fifteen-year-olds behind me, I bounded happily out of the elevator.

But I wasn't just trying to put down a pair of saps, you know; I meant what I said. I write articles for a wide variety of magazines, but these articles right here, the ones I write for the science-fiction audience of F&SF, are the only ones in which I never feel the need to pull any punches. — So let's go into the matter of radioactive breakdown.

Most of the common atoms about us are stable. By that I mean that, left to themselves, unimpinged upon by the outer universe, they would retain their structure unchanged, as far as we know, through all eternity. Some atoms, however, even if left to themselves, break down, give off radiation in the form of photons and/or massive particles, and become atoms of another structure. Such atoms are unstable, and, because of the radiations they give off, are said to be "radioactive."

Suppose you have a single atom of a particular variety (or "nuclide") that is radioactive. That it will eventually break down you can be sure, but

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exactly *when* will it break down? There is no way of telling. It may break down after five minutes, or after five years, or after five billion years.

But if we can't speak of certainties, we can at least speak of probabilities. Some radioactive nuclides are very unstable, and it is much more likely that a given atom of that type will endure less than five minutes before breaking down than that it will endure more than five minutes. On the other hand, some radioactive nuclides are only slightly unstable, and it is much more likely that a given atom of that type will endure more than five billion years than less.

We can't tell what the probabilities are for a particular nuclide by just observing one atom and noting when it breaks down; but we can do it by observing a large number of atoms of a particular nuclide and noting how many break down after one minute, how many after another minute and so on. If we do this, we can work out the mean-life, that is, the average life expectancy.

This is not a very unusual concept. It is exactly what is done in the life insurance business. If we consider a particular human being concerning whom we know nothing, we cannot tell whether he will die in five minutes or in fifty years. However, if we study a great many human beings we will find that we can work out, with considerable precision, the fraction that will die within one year, even though we can't possibly tell which particular individuals will make up that fraction. From a study of many human beings we can calculate our life expectancy.

The situation with human beings is very complex, however. The life expectancy can vary with geography, sex, age, social status, past history and so on. The life expectancy of American males is considerably higher than that of Nigerian males, and rather lower than that of Swedish males or of American females. The life expectancy of White American males is somewhat higher than that of Black American males; that of rural Americans somewhat higher than that of urban Americans; of non-smokers than of smokers; and so on. Again, the life expectancy of fifteen-year-old Americans is considerably greater than that of seventy-five-year-old Americans.

All these complications are not present in the case of atoms. In considering atoms of a particular nuclide, it matters not from what part of the Earth it derives (or from what part of the Universe, as far as we know) or what its surroundings are, or how long it has already existed unchanged. The life expectancy is always and forever the same, for atoms neither age nor sicken.

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This unvarying life expectancy makes the mathematics of the breakdown process rather simple, and it is easy to demonstrate some interesting properties of radioactive atoms from the equations. For instance, it can be shown that for any collection of atoms of a particular radioactive nuclide, any given fraction will always break down in a given time.

Suppose we take the fraction 17/273. Given one pound of radioactive nuclide Q, we will find that 17/273 of that pound will break down in, say, one year. In that case, if we start with two pounds, then we can be sure that 17/273 of two pounds will break down in a year. If we start with a ton, then 17/273 of that ton will break down in a year. In fact, 17/273 of all the Q that exists in the entire Universe will break down in that year.

But since this is true of any fraction, why choose 17/273? Why not choose the simplest one of all, 1/2? Back in 1904, in fact, the British physicist, Ernest Rutherford, suggested this be done. Once the life-expectancy of a particular radioactive nuclide is worked out from some appropriate set of observations, then from that the time in which one-half the atoms of that nuclide will break down (its "half-life") can be calculated.

The half-life is absolutely characteristic of any particular radioactive nuclide. The more nearly stable it is, the longer the half-life; the more unstable it is, the shorter the half-life. And remember, too, that the half-life is not affected by the previous history of the atoms.

Suppose, for instance, that we start with a quantity of atoms of a nuclide with a half-life of one year. In one year, half are gone and only half are left. The half that remain, however, still have a half-life of one year. In another year, then, half of the remaining half are gone and 1/4 of the original number of atoms are left unchanged. In another year after that, half of the remaining quarter, or 1/8, are left, and in another year 1/16 and so on.

If we continue this onward we can see, from the strictly mathematical viewpoint, that the series of fractions gets smaller and smaller in value but never decreases to zero. We can therefore argue (and I have seen it so argued) that although individual radioactive atoms are mortal, the nuclide itself is immortal — that there may be fewer and fewer such atoms with time, but that, however short the half-life of the nuclide, the number never declines to zero.

This is true, if we deal with mathematical symbols only, or if we start with an infinite number of atoms — not otherwise.

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The mathematical equations that describe the course of the breakdown of radioactive atoms depend upon a statistical analysis which, in turn, depends upon the presence of so vast a number of atoms that random variations in the behavior of individual atoms cancel out. The smaller the number of atoms being considered, the greater the influence of random variation, and the less applicable the equations.

Put another way, no matter how large a finite number of atoms you begin with, and no matter how long the finite half-life, given time enough, you will eventually be down to a single atom, and eventually that last atom will also go. So, provided we neglect the fact that atoms of a particular nuclide may be formed in the course of time, we find that radioactive atoms are uneternals, whether they are considered as individuals or as nuclides.

Since the last few atoms of any nuclide, or of any limited sample of a nuclide, behave in an increasingly random manner, and since no one can tell when the last will go, there is no point in talking about the "life" of a particular nuclide and no one ever does. It is always "half-life".

There may be some point in choosing a fraction considerably larger than 1/2. Suppose we try 127/128. If a radioactive nuclide exists on Earth in geologically significant quantities, then even after 127/128 (99.22 percent) has gone, the remaining 1/128 (0.78 percent) will still include a respectable number of atoms to which the equations will apply with good accuracy.

Still, compared with what we began, 1/128 can fairly be considered a small quantity. It may well be that the kind of techniques evolved to deal with the original quantity would not work with sufficient accuracy when only 1/128 is left, and the feeling would be that the nuclide had declined to trace quantities.

Let's therefore call the time after which only 1/128 of the original quantity of a particular radioactive nuclide is left, its "trace-life".* But why 1/128? Because 1/128 is 1/2 X 1/2 X 1/2 X 1/2 X 1/2 X 1/2 X 1/2, so that the trace-life is exactly seven times as long as the half-life.

Now let's start from another track. The Earth is supposed to have existed as a more or less solid globe of its present size for 4,600,000,000 years. If we call a billion years an "eon" (as is becoming increasingly common), we can reduce the number of zeroes with which this article will

**I must confess that this term and, indeed, this concept, is original with me. Please hold organized science guiltless of it.*

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otherwise be riddled and say, for instance, that the age of the Earth is 4.6 eons.

If, then, any radioactive nuclide has a trace-life of more than 4.6 eons, it will be existing on Earth, even today, in more than traces if we must depend only on those atoms originally present on Earth and discount the possibility of new creations since Earth's formation. Any nuclide with a trace-life of more than 4.6 eons would have a half-life of more than 0.66 eons. We can refer to any nuclide with a half-life of more than 0.66 eons, then, as a "long-lived nuclide" with atoms that have come down to us from Earth's beginning.

(To be sure, radioactive nuclides with half-lives of less than 0.66 eons; and even far, far less; exist on Earth, because they are continually being formed. It is not with these Johnny-come-latelies that this article is concerned, however.)

Of the atoms that have existed on Earth from the beginning, most are members of the various stable nuclides that, as far as we know, don't break down at all. There are 264 nuclides of this sort divided among 81 different chemical elements. Again, as far as we know, these are the only 264 nuclides that can possibly be stable, given the laws of physics as they are.

In addition, though, there are atoms that have existed on Earth from the beginning which are members of 21 long-lived radioactive nuclides with half-lives that are greater than 0.66 eons. These are listed in Table 1 in order of decreasing half-life.

Table 1 - The Long-Lived Nuclides

Nuclide	*Half-Life (in eons)*	*Nuclide*	*Half-Life (in eons)*
Lead-204	14,000,000,000	Platinum-190	700
Calcium-48	20,000,000	Lanthanum-138	110
Cerium-142	5,000,000	Samarium-147	106
Neodymium-144	5,000,000	Rhenium-187	70
Hafnium-174	4,300,000	Rubidium-87	47
Platinum-192	1,000,000	Lutetium-176	21
Vanadium-50	600,000	Thorium-232	13.9
Indium-115	600,000	Uranium-238	4.51
Samarium-149	400,000	Potassium-40	1.30
Gadolinium-152	110,000	Uranium-235	0.713
Samarium-148	12,000		

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Some of the half-lives of these long-lived nuclides are inordinately long. The half-life of lead-204 is fourteen billion eons. Even during the 4.6 -eon-lifetime of Earth, only a tiny fraction of lead-204 has had a chance to break down; only one ten-billionth, in fact. Since there are about six trillion (6,000,000,000,000) tons of lead-204 in the Earth's crust, we can say that during the entire course of Earth's long history, only 600 tons of lead-204 has broken down.

Of course, if we want to deal in single atoms we can express this a little more dramatically. So enormous are the number of atoms in any reasonable quantity of material that even if it takes fourteen billion eons for half of them to break down, an appreciable number manage to break down in the first second.

Suppose we imagine ourselves to possess a pound of pure lead-204. (This is a piece of good imagination, for ordinary lead is made up of a mixture of lead-204, lead-206, lead-207, and lead-208, with lead-204 the component present in the smallest quantity — 1.48 percent of the whole. If your fairy godmother gave you a pound of pure lead-204, you could sell it for a fantastically large sum.)

In that pound, if you had it, about 30,000 atoms would be breaking down each second. This rate would continue onward for second after second at an apparently constant rate. Measurements throughout the entire space of man's civilized existence on Earth would not be able to detect any decline in the rate of breakdown. But of course, the rate would be very slowly declining just the same, and after fourteen billion eons, when half the atoms in the pound of lead-204 had broken down, the rate of breakdown would have declined to 15,000 atoms per second.

And, while we are thinking of lead-204, who is to say that 14 billion eons is the top-value for half-life. It's just that the longer the half-life, the fewer breakdowns per second there are, the feebler the radioactive intensity is, and the harder it is to detect it. If some nuclide were breaking down more slowly than lead-204, it would have a still longer half-life and would be still more feebly radioactive. We might not be able to detect so feeble a radioactivity, but it would be there.

Perhaps as we learn to detect feebler and feebler levels of radioactive intensity, we could find half-lives that were longer and longer, and end by deciding that *every* nuclide (except perhaps hydrogen-1, the simplest, from which all the others have arisen since the beginning of the Universe) is radioactive to some more or less infinitesimal degree, and that only hydrogen-1 is truly stable.

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But let's be reasonable. However numerous 30,000 atoms per second seems to us; out of a pound of lead-204, with its trillion-trillion atoms, it is virtually nothing. We might as well consider lead-204 to be effectively stable, even if it is not ideally so. In fact, in order to avoid trying to make an absolute distinction between radioactive and non-radioactive nuclides — a distinction which may not exist and which may only be illusorily imposed on us by the state of the art — let's say that any nuclide that has lost less than one percent of its mass through radioactive breakdown in the course of the Earth's existence is effectively stable.

For more than one percent of a nuclide to have broken down over the course of the Earth's lifetime, the half-life must be less than 320 eons.

So we have worked ourselves down to a consideration of those nuclides which, through radioactive breakdown in the course of Earth's history, have lost more than one percent of their mass and less than 99.22 percent of their mass. These have a level of intensity of radioactivity high enough to be considered reasonably substantial, and yet not so high as to forestall a useful amount from existing in Earth's crust today.

The number of nuclides that meet the exacting requirements of having a half-life between the limits of 320 eons and 0.66 eons are exactly nine in number, and it is highly doubtful that a tenth member of this exclusive club will ever be discovered. The long-lived radioactive nine are listed in Table 2 in order of decreasing half-life, and the fraction of the original quantity of each which still exists today is also given.

Table 2 - The Effectively-Radioactive Long-Lived Nine

Nuclide	*Half-Life (in eons)*	*Fraction of original remaining today*
Lanthanum-138	110	0.97
Samarium-147	106	0.97
Rhenium-187	70	0.95
Rubidium-87	47	0.93
Lutetium-176	21	0.86
Thorium-232	13.9	0.79
Uranium-238	4.51	0.50
Potassium-40	1.30	0.086
Uranium-235	0.713	0.012

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As you can see from Table 2, most of the nine have not seriously diminished in the course of the Earth's history. Even thorium-232, sixth on the list, is still present in four-fifths of its original quantity. The only really serious diminutions are those of the last three nuclides on the list. We have only one-half remaining of the original uranium-238 with which Earth was supplied, only one-twelfth the potassium-40, and only one-eightieth the original uranium-235.

Of the nine effectively-radioactive, long-lived nuclides, consider potassium-40. It is the least massive nuclide to demonstrate long-lived radioactivity. In general, nuclides with small mass are more common in the Universe than those with large mass, so we might suspect that potassium-40 is the most common or, at the very least, one of the most common of the long-lived nuclides.

We can check this. The relative quantity of the elements in the Earth's crust is known in a very rough way, and we can use that as the starting point for what it's worth. Then, the relative quantity of a particular nuclide in a given element is also known, and we can use that.

For instance, the amount of potassium in the soil is estimated as 25,900 parts per million. Since potassium-40 makes up only 0.0119 per cent of all the potassium atoms, we can say that the potassium-40 content of the soil is about 3.08 parts per million. In this way, we can prepare Table 3, which gives the values (very rough ones) for the quantity present in the Earth's crust of each of the 21 long-lived nuclides in Table 1.

Table 3 - The Radioactive Nuclides in Earth's Crust

Nuclide	*Quantity in Earth's Crust (in parts per million)*
Calcium-48	67.2
Rubidium-87	33.6
Thorium-232	10
Neodymium-144	5.6
Cerium-142	5.1
Potassium-40	3.08
Uranium-238	2
Samarium-147	1
Samarium-149	0.9
Samarium-148	0.8
Vanadium-50	0.26

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Nuclide	*Quantity in Earth's Crust (in parts per million)*
Lead-204	0.22
Hafnium-174	0.1
Indium-115	0.1
Lanthanum-138	0.02
Lutetium-176	0.02
Uranium-235	0.015
Gadolinium-152	0.01
Rhenium-187	0.0006
Platinum-190	0.00005
Platinum-192	0.0000006

It would appear, from Table 3, that calcium-48 is by far the most common radioactive nuclide on Earth. There is about as much calcium-48 in the Earth's crust as there is all other radioactive nuclides combined.

Yet, really, that is not very impressive. Calcium-48 has such a long half-life (twenty million eons) that the number of its atoms breaking down per second cannot be very impressive. It would be quite easy for nuclides present in lesser concentration but with a *far* lesser half-life to outdo it enormously in this respect. And it is, after all, the number of breakdowns per second that is a more natural measure of the importance of a radioactive nuclide than the mere accumulation of inactive mass.

Why not convert Table 3 into one that measures the number of atomic breakdowns per second for each nuclide. To avoid astronomical figures, I won't try to deal with the total number of breakdowns per second over all the Earth's crust, but will give the relative numbers by setting the value for uranium-238 arbitrarily at one. The result is Table 4 in which, we see, only six of the nuclides have figures large enough to be worth noting.

Table 4 - Nuclide Breakdowns

Nuclide	*Breakdowns per second (uranium-238 = 1)*
Potassium-40	31
Rubidium-87	4.3
Thorium-232	1.6
Uranium-238	1.0
Uranium-235	0.05
Samarium-147	0.03
all others	0.004

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We can see from Table 4 that potassium-40 does indeed dominate the field. If we consider all the long-lived radioactive nuclides on Earth, it turns out that more than four-fifths of all the breakdowns taking place each second are breakdowns of potassium-40.

That is the situation as it is *now*. What about the past? What was the situation at the time of the Earth's beginning 4.6 eons ago?

Each of the radioactive nuclides listed in Table 4 has shrunk in quantity since Earth's origin by at least several percent. Those of the entire group of 21 which are *not* listed in Table 4 are so weakly radioactive and have therefore shrunk so little in quantity that we can, without serious error, consider their contribution both trifling now and equally trifling at the time of the Earth's formation.

Table 5 - The Radioactive Nuclides in Earth's Crust at the Beginning

Quantity in Earth's Crust at the Beginning (in parts per million)	*Nuclide*
36.8	Potassium-40
36.0	Rubidium-87
12.7	Thorium-232
4.0	Uranium-238
1.0	Samarium-147
0.12	Uranium-235

Taking into account then only those nuclides listed in Table 4, we can calculate the amount present of each in the Earth's crust at the start and reach the figures presented in Table 5. In Table 6, we have the relative number of breakdowns per second for those nuclides as they took place at the time of Earth's formation.

From the standpoint of the elements, the biggest difference in the Earth's crust at the time of formation, as compared with the present, is in the uranium content. The only nuclides found in uranium, as it occurs naturally, are uranium-238 and uranium-235, both of which have comparatively high levels of radioactive breakdown. As a result, Earth's

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Table 6 - Nuclide Breakdowns in Earth's Crust at the Beginning

Nuclide	*Breakdowns per second at the beginning (uranium-238 = 1)*
Potassium-40	180
Rubidium-87	2.3
Uranium-235	2.0
Thorium-232	1.0
Uranium-238	1.0
Samarium-147	0.02
all others	0.002

crust was twice as rich in the element uranium at the time of its formation as it is now.

What's more, the ratio of the nuclide content was different. At the present moment, uranium is 99.28 percent uranium-238 and only 0.72 percent uranium-235. Since uranium-235 has a half-life less than a sixth that of uranium-238, it has been disappearing considerably more quickly. At the time of Earth's formation, the element was something like 97 percent uranium-238 and 3 percent uranium-235.

Although of the long-lived nuclides, potassium-40 disappeared more rapidly than did any of the others but uranium-235, this did not affect the total quantity of potassium in the Earth's crust. Unlike uranium, potassium is not composed of radioactive nuclides only. Indeed, 99.99 percent of potassium is made up of the two stable nuclides, potassium-39 and potassium-41. Potassium-40 makes up only 0.0119 percent of the element.

At the start, potassium-40 was nearly twelve times as great in quantity as it is now, but even then it was still only about 0.13 percent of all the potassium. That larger percentage is still so small that it doesn't significantly alter the total quantity.

Notice, however, that at the time of the Earth's formation, the number of breakdowns of potassium-40 was a truly overwhelming majority of the total number of breakdowns of the long-lived radioactive nuclides. Over 96 percent of all atomic breakdown of long-lived radioactive isotopes on Earth involved potassium-40.

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The vast predominance of potassium-40 radioactivity in the Earth's original crust, and the lesser but still considerable predominance of the nuclide today raises two questions:

1) Why is so little attention given to potassium-40 and so much to uranium-238 and thorium-232, when one deals with such matters, for instance, as the effect of radioactivity in heating up Earth's interior?

2) The six nuclides listed in Table 4 were the first to be discovered to be radioactive, which is not surprising since they experience far more breakdowns than all other long-lived radioactive nuclides put together. Yet it was the radioactive properties of uranium and thorium that were first discovered, in the late 1890s, whereas the radioactive properties of potassium and rubidium were not detected till 1906. Why the ten-year delay in detecting the far greater number of breakdowns of the latter?

I'll go into that next month.

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Mr. Young's new story arrives like a breath of fresh air which will, we trust, help blow away all those "sensational" theories about astronauts from space landing on ancient Earth to be worshipped as gods. Here, then, is the Way It Would Have Been in such a confrontation between space gods and ancient, naive Man and Woman.

The Star of Stars

by ROBERT F. YOUNG

In one sense, our story ends before it begins.

It ends long ago on Earth in the "Land of Shinar," on the Tigris-Euphrates Plain.

It begins in the present with the discovery of a perfectly preserved set of transspace holograms in one of the dead cities of the Planet of Lost Laughter.

The hero of the holograms is a prehistoric space traveler named Hwanonin. The "Hwanonin Holograms" do not record everything he did and thought and saw and said — this would manifestly have been impossible — and they omit his early years; but with the help of other holograms found in the same city and a modicum of poetic license, it is possible to reconstruct his life up until the moment his world lost contact with him.

He was born during the twilight years of his planet's civilization. His education was supervised by a mech-mentor, his physical and emotional needs attended to by a mech-mother. At the age of nine he knew all there was to be known about machines and was firmly grounded in the sciences and the humanities. This lifted him to the level of apprentice adulthood and entitled him to the use of all the facilities the city had to offer both in the way of pleasure and of higher learning. But in order to attain full adulthood he had first of all to choose a field of endeavor subject to his mech-mentor's approval and then to make a mark in it.

At the age of twelve, Hwanonin discovered sex but did not find it wholly to his liking. At the age of fifteen, he attained physical maturity (these are not Earth-years, but the difference is negligible). The pleasures the city had to offer were varied but far from stimulating to the senses. Hwanonin sampled all of them but found none to which he

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cared to return for more. Inevitably he gravitated towards higher learning. This was more in the city's line. Open-air classrooms abounded, and the sound of mech-mentors' voices never ceased. There were indoor-outdoor libraries and museums everywhere, and visual, auditory and tactile aids to learning were never more than a step away.

Hwanonin walked through a hundred fields before he came to one he liked. It had a name: "Para-evolutionary Patterns." Civilizations on the nearer inhabitable planets were kept under constant surveillance, just in case, and the progress of each was recorded daily. Up-to-date transspace holograms were available in every library in the city. Hwanonin wasted no time in availing himself of them.

His civilization was a vastly old one; viewing young ones from its eminence proved to be not only an edifying but a fascinating pastime. He felt sometimes like a god looking down upon a tiny ant hill, and he never ceased to marvel at the stupidities of the purblind creatures scurrying about in the sunlight "far below" him and hiding in their mud-brick tunnels by night.

All told, fourteen civilizations on ten different planets were kept under surveillance. One of the planets had four, one of them had two, and the rest had one apiece. Hwanonin found the two coexistent civilizations the most interesting, primarily because they were composed of beings similar — if not identical — to himself. According to the holograms, one of them was slightly older than the other; also according to the holograms, there had as yet been no contact between them.

He found the older one more intriguing. It was both a laughable and a lovable "ant hill." Everyday the human ants came out of their "tunnels," made the same mistakes and went back into them again. Most of the mistakes, to Hwanonin's way of thinking, were attributable to the same cause: the inability of these primitive people to value anything unless it could be put to practical use. If somehow noble concepts could be injected into their thought-stream, they might stop warring amongst themselves; if somehow a real deity could be made to appear before them and speak the real truth, they might stop expending huge amounts of labor building temples to house nonexistent ones. If—

Abruptly Hwanonin gasped.

Why *couldn't* a real deity be made to appear before them?

Why not indeed!

Hwanonin found his mech-

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mentor sitting in the sun-dappled shade of an open-air classroom. He told the mech-man the field of endeavor he had settled upon and outlined the nature of the mark he intended to make.

For a while the mech-man was silent and did not look at the youth (Hwanonin was seventeen at the time) who had sat so precipitately down beside him. Then he picked up two twigs, fashioned them into two stickmen and held them up for Hwanonin to see. "Look, I have made two men, Hwanonin. Would you say they are identical?"

"Yes," Hwanonin answered. "As identical as two men can be."

"No, Hwanonin. They are only *seemingly* identical. I have made them from two different kinds of wood. The one in my right hand is made of a pliant species. See how easily he can be bent, how quickly he springs back into shape? The one in my left hand is made of a different species. See, I can hardly bend him at all."

"If you were a god you could."

"Perhaps. But you are no more of a god than I am. Also, you have miscontrued my analogy. The stickman who resists change represents *your* race, the pliant one the race you wish to bend to your way of thinking. The flaw in your reasoning is represented by the tendency of the pliant stickman to reacquire his original shape."

"I consider the analogy unfair," Hwanonin said. "It is based on an arbitrary assumption."

"Very well," said the mech-man, "I will approach the argument from a different angle: In addition to the difficulties you will encounter after you reach your destination, there are the difficulties you will encounter in the building of the vehicle you need in order to reach it."

"I can overcome them," Hwanonin boasted. "Our technology can solve any problem that arises, no matter how complicated it is. I'm surprised that such a vehicle has never been built before."

"One never has because up till now no one ever wanted to. Our technology is capable of innumerable things that no one cares to accomplish because their accomplishment in most cases would amount to no more than a *tour de force.* In all fairness, Hwanonin, wouldn't you say that the mark you intend to make falls into this category?"

"Perhaps," Hwanonin said. "But only by making it will I ever know for certain."

"There is yet another consideration," said the mech-man. "Time. Before you build your vehicle, you must invent it. Invent it, you undoubtedly will, but you will not do so overnight. A good ten years will pass before you can even begin

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your journey. And no matter how clever an inventor you may turn out to be, you won't be able to build a ship that can exceed the speed of light. Instead, you will have to travel just below it, which means that far more years will pass on the planet of your birth both during your voyage out and your return journey than will pass for you. Thus, the world to which you return will not be the same one you left, and you will find readjustment difficult, if not impossible. Do you think that making the mark you contemplate is worth such a high price?"

"Probably not," Hwanonin said. "But I am willing to pay it."

"Very well. Since you cannot be dissuaded, I have no recourse but to permit you to proceed. I'll make the necessary arrangements for your activities to be hologrammed for future reference."

It required Hwanonin twelve years to build his spaceship, not ten. Finding a practical energy source posed the major problem. He had to settle, finally, on /2-/, an indigenous radioactive ore. It wasn't altogether a practical solution, because to carry enough to provide sufficient energy for a round trip would necessitate building an enormous ore bin and in addition there would have to be heavy shielding to prevent leakage.

Even in blueprint form the ship looked ugly. The bin appeared as a huge single stage, with the module, ludicrously small by comparison, resting on top of it. He got rid of some but not all of the ugliness by incorporating steps in the bin, lending the illusion of a series of stages. As soon as the design was finished, he set the machines to work. They were sophisticated and ingenious machines, but they had their work cut out for them. The months sped by, the years. Hwanonin took advantage of the passing time to broaden his knowledge of the alien beings out of whose heaven he would someday descend.

Gradually the ship acquired form. It aroused mild interest, and the people of the city visited the outskirts in twos and threes and fours to view it. They were understandably amused. Some said it looked less like a ship than a hill. Superficially this was quite true: the ship *did* look like a hill — a terraced hill with a house sitting on top of it. But that didn't mean it couldn't get off the ground.

Hwanonin had the machines build a wide stairway on one side of the massive substructure. It provided a pleasant if incongruous decor and gave easy access to the module's locks. The outer lock opened onto a spacious landing that flanked the rectangular

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module on all four sides. The burnished hull of the substructure had a golden cast; in contrast, the trans-metal hull of the module gave forth a bluish glow. Vertical apertures interrupted the latter at even intervals. They were sealed now, but when opened would serve as windows.

The control room was centrally located. Directly behind it was the hydroponic garden, and to the left and right, respectively, of both control room and garden were Hwanonin's spacious cabin and the storeroom-galley. The forward section of the module consisted of a long, narrow room whose main appointments were a round trans-metal table and a richly upholstered divan. Beneath the module's desk, directly above the anti-Z2-/ shielding, were the reservoir, the artificial grav unit and the oxygen-generating system. The Z2-/-radiation converter was located just above the base of the bin.

At last all was ready. Hwanonin bade farewell to his mech-mentor and his mech-mother and climbed the stairway to the module. Such was the sophistication of his race that only a handful of his contemporaries came to witness his departure. He had by this time grown a whisk-broomlike beard and let his hair grow to his shoulders where it lay in rich dark curls and ringlets. His attire consisted of a plain yellow tunic, a yellow headband and black sandals with golden laces that crisscrossed his legs to his knees. He entered the module, sealed the locks and lifted the ungainly ship, which he had christened the *Star of Stars*, into the Planet of Lost Laughter's atmosphere. The long voyage began.

Today we know Hwanonin's birthplace not only by the sobriquet we have applied to it but by its official NRGC listing as *a* Centauri VI. Astronomically speaking, it is close to Earth, and Hwanonin's voyage would have been far longer had he chosen to play god on one of the nine other "para-evolutionary worlds." Nevertheless, creeping along at just under the speed of light, it was long enough.

He spent the approximately six objective years of its duration studying the language, religion, and customs of the primitive humans he hoped to ennoble. Throughout, his enthusiasm for his chosen field remained undiminished, and not once did he experience loneliness. He found, as many voyagers had found before him and many would find after, that while the loneliness of long voyages is a state of mind produced by being apart from men, it cannot affect those who all their lives have been along while in the midst of men.

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The success of his mission depended in part upon his arrival being witnessed by as many people as possible. So he timed his planetfall to coincide with mid-morning on the Tigris-Euphrates Plain and set the *Star of Stars* down less than half a mile from one of the handful of city-states that comprised the civilization he had come to edify. To the west, hardly more than a stone's throw away, flowed the Euphrates; to the east, out of sight beyond the fields and marshes, and a range of rolling hills, flowed the Tigris. The sky was blue, the season summer. The city-state's name was Shuruppak.

No sooner did he deactivate the converter than the *Star of Stars* began to settle. He experienced a very bad moment, but fortunately the field of barley on which he had landed had a firm substratum, and the *Star of Stars,* after sinking to the height of its first step, came finally to rest.

Hwanonin couldn't have asked for more witnesses. The surrounding fields were full of them; the city's walls were lined with them. Those in the fields were members of the temple community whose turn it was to donate their services to the goddess Ninlil; those on the walls were artisans, merchants, priests and laborers who had seen what appeared to be a mountain falling out of the sky and had hurried to a high place to obtain a better view. The former took one look at the *Star of Stars,* dropped their primitive implements, and ran; the latter, apparently considering themselves safe for the moment, remained where they were, their ranks swiftly swelling as word of the mountain that had dropped from the sky swept through the streets of the city.

The then king of Shuruppak was Zu-is-udu. He was renowned for his fearlessness in battle and for his fealty to Ea, counselor of the gods. Ea had told him in a dream to be on the lookout for an omen from the sky. Naturally when he heard about the "mountain," he assumed it to be just that.

Omen or not, however, it came under the jurisdiction of Shim-mu the *sangu,* not the king's. As custodian of the temple and supervisor of the temple community, the high priest functioned as a sort of liaison man between the citizens of Shuruppak and the gods, and the concept of the gods was so tightly tied in with the concept of mountains that it was virtually impossible to think of one without thinking of the other.

Shim-mu accepted the responsibility, if not with inner equanimity, then with outward calm. Summoning his *nubanda,* or steward, and choosing two husky

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acolytes, he left the temple-palace complex, passed through the city's Exalted Gate and out onto the plain. Between the *Star of Stars* and the city a field of millet undulated in the morning wind. Reluctantly the quartet waded into it. The king watched the procession from his chamber window; his second wife, Queen Il-yan-na, watched it from hers on the floor above. The rest of the populace watched from the walls.

Arriving at the base of the *Star of Stars'* stairway, the sacerdotal quartet halted. Their ankle-length skirts were hidden by the undulating millet, but the sunlight could be seen gleaming brightly on their shaven heads and naked backs.

All four were trembling even before Hwanonin emerged from the module and appeared at the top of the stairway. When he started down, they dropped to their knees, and only their heads were visible to the watchers.

Hwanonin halted on what was now the bottom stair. He paused for an appropriate moment, then: "I am Anu the sky-god," he said.

He bore not the slightest resemblance to the clay statue of Anu that stood in the subchapel in the Temple of Ninlil, goddess of the city. Like Shim-mu the *sangu* — and virtually all other Sumerian males — the clay Anu was short and stocky, had protuberant eyes, a noticeable nose and large ears. Hwanonin, on the other hand, was tall and lithe, and delicate of features. His whisk-broom beard lent him a maturity he hadn't quite attained, and his long black hair gave his handsome face a tenuous aura of beauty.

The sacerdotal quartet had by this time prostrated themselves and touched their foreheads to the ground. Hwanonin ordered them to stand up; then he said to Shim-mu, whose hierarchical office he had ascertained from the Chalcolithic sacrificial dagger in the *sangu's* belt, "Tomorrow at this same hour you will visit me alone, and I will inform you of what I want done. Meanwhile you will tell the people that Anu has descended from the sky to help, not harm them."

Hwanonin-Anu raised his right arm, signifying that the momentous meeting was over. The sacerdotal quartet backed obsequiously into the field of millet, and he turned and ascended the stairs of the substructure to his module.

Deep in the devious corridors of the Shim-mu the *sangu's* mind there had long lurked a suspicion that the gods whose whims and ways he interpreted for the laity did not truly exist. But it was not until the arrival of Anu that he realized he did not *want* them to exist.

Moreover, he could not under-

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stand why Anu and not Ninlil had come. If the administration of temple affairs was at fault, seeing that it was corrected lay in her province, not the sky-god's.

Understandably, then, Shim-mu resented Anu's presence. Just as understandably, he dared not let his resentment show in any way whatsoever. The best way to hide it, he reasoned, would be to perform a multisacrifice at once.

Accordingly, upon his return to the city and after imparting to the king the minutes of the momentous meeting, he requisitioned ten goats and ten sheep from the temple compound and ordered a temporary wooden altar to be built at the foot of the "Temple of Heaven's" stairway. While the altar was being built, he and his *nubanda* assembled the major priests and appointed four acolytes to superintend the sacrificial livestock. Near midafternoon the group left the temple, passed through the Exalted Gate and entered the field of millet, Shim-mu in the lead, and the maaing, baaing goats and sheep bringing up the rear.

Virtually all activity, both in the city itself and in the fields encompassing it, had by this time come to a halt, and the walls and the higher rooftops were thronged with watchers. Only the king and his generals remained aloof from the forthcoming sacerdotal spectacular: they had assembled in the palace annex and were discussing the problems that might arise when the other Sumerian city-states got wind of Anu's presence.

When the sacrificial group arrived at the base of the Temple of Heaven's stairway, Shim-mu directed that one of the goats be brought forward and lashed upon the wooden altar. This was done. Then the *sangu* withdrew the sacrificial dagger from his belt and stepped forward. As he did so, he noted with satisfaction that Anu had come out of the temple proper and was standing at the head of the stairway, gazing down upon the proceedings below.

The sacrificial dagger was serrated along one of its edges to expedite dissection. Shim-mu raised it and began intoning the fourth propitiation-prayer. Halfway through it, he lifted his eyes and saw that Anu had left the landing and was hurriedly descending the stairs. Both his mien and the expression on his face bespoke his terrible anger.

So clearly did they bespeak it that workers standing in the farthest fields could detect it, that Queen Il-yan-na's ladies-in-waiting watching from the palace roof could see it; that Queen Il-yan-na herself, gazing through the clay grillework of her chamber window, could not mistake it.

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Shim-mu's arm dropped to his side. The sacrificial dagger slipped from his fingers and fell to the ground. The fourth propitiation-prayer became dust in his throat.

Arriving at the base of the stairs, Hwanonin-Anu picked up the dagger, slashed the goat's lashings and threw the dagger halfway to the Euphrates. He turned the altar upside down, then faced the terrified high priest. "It is not the blood of a goat or a sheep I have descended from heaven for," he said, "but something of a far more noble nature. Return to your temple, *sangu*, and before you come back here tomorrow, give my words some thought."

The sacrificial party, with Shim-mu in the lead, half-fled back to the city. So confounded was the high priest by the sky-god's unorthodox behavior that several times his footsteps faltered and his *nubanda* had to steady him. Once he reached the relative coolness of the city's streets, his mind cleared somewhat; once in the temple, it cleared altogether. He saw now that in offering Anu such lowly fare as the blood of goats and sheep he had erred egregiously. But all was not lost: all he had to do to assuage Anu's anger was make the right offering, and he knew from the sky-god's words what that offering should be.

Summoning one of his acolytes, he dispatched him to the palace with word that the *sangu* wished an immediate audience with the king.

Hwanonin had been far angrier at himself than at Shim-mu. He should have anticipated the high priest's first act and have informed him not to conduct any sacrifices. But he hadn't, not even when the wooden altar had been built at the base of the stairway. Stepping from one thought-stream into another had proved to be more difficult than he had imagined.

Otherwise, his first day on Earth went quite well. He spent most of it sitting on the divan in his living quarters preparing the first of the series of lectures he intended to begin on the morrow. He had unsealed the module's apertures and had an excellent view of the city and the encompassing countryside. Repeatedly he glanced up from his work at the clusters of multicolored beehivelike houses beyond the bright-yellow outer walls and at the alabaster-white temple-palace complex beyond the vermilion inner wall. He had chosen Shuruppak over the other city-states because it had fascinated him the most. Actually, however, it differed but negligibly from the others, and his fascination had stemmed from the fact that it had been the first Sumerian city he had studied.

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With the setting of the sun the wind died down, and a hot stillness settled over the fields. Hwanonin prepared a simple meal, drawing upon the huge supply of rations he had brought with him. He reminded himself to build a raincatch in the morning to replenish his recycled water supply. Eventually he would accustom his system to native food and water, but not yet.

He ate at the trans-metal table in the main living quarters, gazing wistfully through the open lock at the city. Night had fallen by the time he finished, but he continued to sit at the table, gazing through the lock. The flames of torches ornamented the city's raven hair; the sound of musical instruments, of voices raised in song, reached his ears. The lonely hours tiptoed past. The torches grew feebler, one by one went out. He dozed. When he awoke, the moon had risen, and a silver mantle lay palely over the fields. Something had awakened him. He leaned forward in the darkness and stared into the moon-pale night. Listening.

Soon he heard the sounds again: a faint scraping, as of footsteps on the stairs; a silken whispering; a sigh. Her silhouette took shape against the city and the moon-pale sky as she paused without the door. When he wished on the module lights, she started; then she stepped hesitantly into the room.

A black wig interlaced with multicolored beads adorned her head and was augmented by a headdress fashioned of artificial flowers and fringed with copper pendants shaped like beech leaves. Enormous copper earrings seemed to be suspended from her hidden ears, but in actuality were attached to her wig. A six-strand necklace made of blue beads tightly encircled her neck, while a second, larger strand consisting of scarlet beads looped far down over her breast. Her arms, bare to the elbows, were heavily laden with copper amulets. Her white loose-fitting gown fell all the way to the floor.

Her eyebrows, black to begin with, were rendered more so by jet-black stain and were elaborated into perfect arches. Primitive eyeliner accentuated the deepness of her brown eyes; her nose, slightly broad, made her painted mouth seem smaller than it really was. Rouge-roses bloomed in both her cheeks, and sickish-sweet myrrh emanated from her in almost overwhelming waves.

And Hwanonin? He looked through the layers of make-up, peered through the haze of perfume, and saw — or thought he did — the face of a young and innocent girl.

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He had got to his feet. Trembling, she knelt before him, looked imploringly up at his face. He saw terror in her brown eyes.

He told her to stand up. When she obeyed, myrrh engulfed him, seeming to dim his sight. He was angry. Where in the world had the *sangu* got the notion that he wanted to be visited by a virgin? "It was the *sangu* who sent you, wasn't it?" he asked.

"Yes. I am the eldest daughter of the king."

His anger transmuted to astonishment. He had known from her attire that she was no common virgin, but it was unthinkable that she should be the king's daughter.

Or was it? Would the *sangu,* on the first night of Anu's visit, have dared to offer less?

He made her sit beside him on the divan, hoping to drive some of her terror away. She sat stiffly on the pillows, gazing straight before her. He discovered that he was staring at her. Compared to the tall angular women of the Planet of Lost Laughter, she seemed short and dumpy. He should have found her ugly. Oddly, he did not.

Why was she so afraid? Suddenly he knew — or thought he did. She was afraid that he might consider her unworthy, that he might spurn her the way he had spurned the goat.

Timidly he touched her painted cheek. He felt a sudden emptiness in his chest, a faint throbbing deep within him.

She said, "Lion, my name is Nur-ad."

He thought for a moment that her terror had departed, but when he covered her hand with his and felt the trembling of her fingers, he knew that it had not. That it would not, until, until —

But could such a union be consummated? She was, after all, a member of a slightly different species than he. True, there were no apparent differences, but for all he knew there might be many that were *not* apparent.

And then again, there might not be.

He repeated her name: "Nur-ad."

She did not move.

He wished out the lights, felt for her in the darkness. Her gown rustled as he removed it, whispered as it fell to the floor. A faint muskiness mingled with the myrrh, half maddening him. Her necklace of beads rattled faintly as it joined her gown upon the floor. Moonlight crept into the room and bathed their intermingled limbs. Hwan-onin felt himself falling through the deeps of space, through swarms of iridescent stars. There was a star far brighter than the others. He reached for it as he fell, and as he touched it, it exploded into a

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thousand shards of blinding therapeutic light.

Lying beside him in the dawn light, no longer afraid, Nur-ad said, "That I have pleased thee well, Lion, will make my death less hard to bear."

"Does custom dictate that you must die?"

"No, but Shim-mu said it would be your wish."

"It is not my wish, and I will so inform him. You will stay here with me until he comes."

With Anu's reaction to the attempted sacrifice of the goat still fresh on his memory, Shim-mu was not surprised. This is not to say, however, that he wasn't disappointed. "But it is imperative that she die," he objected. "That the temple altar be purified by her blood."

"You're always eager, aren't you, Shim-mu, to let someone else's blood. But from now on, the only blood you let will be your own!"

Shim-mu bowed his head.

"Upon your return to the city," Hwanonin-Anu continued, "you will make it known that soon after the sun-god Utu departs his midday throne Anu will begin spreading knowledge from the steps of his temple and that he wishes all those who are not at work to gather in the field below."

The *sangu* was horrified. Knowledge was the sacred province of the priesthood. Spreading it would be tantamount to undermining the temple, and if the temple fell, the city would follow soon after. Was the sky-god mad?

Perhaps he *wanted* the temple to fall.

Since entering Anu's temple, Shim-mu had been covertly eyeing every detail of the long, narrow room in which Anu had received him, particularly the trans-metal table which in the *sangu's* eyes had the aspect of solid gold. But even more fascinating than the room in which he stood was the room immediately beyond. He could not see all of its interior through the connecting archway, but he could see enough of it to lend him hope that perhaps the sky-god could be thwarted if it was his intention — as would certainly seem to be the case — to destroy the power of the priesthood. Specifically, he could see the magnificent altar upon which Anu made sacrifices for the purpose of raising and lowering the Temple of Heaven. It stood to reason that if the sky-god could raise and lower the temple by making sacrifices, then Shim-mu could also. And it followed as naturally as floods followed rain that were the *sangu* to prove himself capable of performing such a feat, his esteem in the eyes of the

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people would go up, and simultaneously Anu's would go down.

But before he could even lay the groundwork for such an exhibition, he must first dream a dream that would tell him which sacrifices to make and which prayers to utter while he was making them. Meanwhile he would have to play along with the mad sky-god and make extra offerings to Ninlil the Earth Mother so that she would keep Anu from peering into his mind.

"Very well, O Anu," he said unctuously, "I will convey your wishes to the people. And I will inform them that before Utu has retired for the night they will be far wiser than they were when he arose."

Shim-mu's fears were not entirely groundless. While it was not Hwanonin's intention to destroy the priesthood, he would not hesitate to do so if it could not be bent to the New Attitude he hoped to bring into being.

That afternoon he delivered the first of the series of lectures that should have etched him deeply in the minds of his listeners. They were legion even on that first day, overflowing into the fields on either side. Astronomy was his first subject. The Sumerians believed the sun, the moon, the planets and the stars to be made of wind (albeit they worshipped them as gods) — a wind that differeed from the earthly variety in that it possessed luminosity. They also believed the earth to be a flat disk and the sky to be made of tin. He did not attempt to dissuade them of these convictions, but merely pointed up the few facts they had at their fingertips by adding others they were capable of accepting, hoping to make them as proficient as the priesthood in computing the seasons.

He accomplished his real purpose — i.e., the seeding of noble concepts — by occasionally interjecting a comment that seemingly had something to do with what he was talking about. E.g., "The tallest tower reaches no closer to heaven than its lowliest foundation stone."

At first his audience was confined to the inhabitants of Shuruppak and the immediate countryside. But as the weeks passed and word of his presence spread, pilgrims came from Sippar, Larak, Eridu and Ur and camped in goatskin tents on Shuruppak's environs so that they might attend his daily talks. Always he had his audience's absolute attention. Even he was at a loss to explain the intentness with which they seemed to listen to his every word and the fascination with which they looked up at him; for his voice, even aided

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by the miniaturized loudspeaker which he secretly employed, was anything but commanding, while his aspect, despite his physical attractiveness, was anything but arresting. He finally ascribed their absorption and their fascination to a natural reaction to his godhood and to a natural hunger for knowledge. He was wrong on both counts.

Often he glimpsed Nur-ad standing among his listeners, and her gaze would be soft and warm upon his face. Shim-mu had sent him many virgins since that first night, and he had found one or two of them to his liking. But invariably it was Nur-ad of whom he dreamed when he drifted off to sleep.

Also numbered among his listeners were warriors armed with spears. At the moment peace endured among the city-states, but a multitude comprised of the peoples of Shuruppak, Sippar, Larak, Eridu and Ur was an unpredictable multitude at best, and the king was taking no chances. Neither he nor his generals ever appeared: the latter were too busy mapping campaigns for future wars, while the former was too preoccupied with the task Ea had ordained for him.

"The sole purpose of a dwelling," said Hwanonin-Anu, "is to shelter its inhabitants and keep them warm. To accomplish this, it need be neither larger nor more pretentious than its neighbors."

"Those things that cannot be touched," said Hwanonin-Anu, "can never be obtained by accumulating those that can."

"Would the greatest structure on Earth be the least bit different from an ordinary hill," asked Hwanonin-Anu, "if man were not present to make the distinction?"

Winter came. The days and nights grew cold, and Shim-mu the *sangu* wore goatskins when he visited the Temple of Heaven. Anu summoned him several times a week, primarily because he was lonely and wanted someone to talk to; but since their conversations amounted mainly to questions concerning the temple community on his part and to answers on the *sangu's* part, Shim-mu became more convinced than before that Anu's sole purpose in descending from the sky was to destroy the priesthood. Augmenting the conviction were the heretical words Shim-mu himself had heard the sky-god interject into his lectures.

The priesthood, however, was as remote from Hwanonin's thoughts as the Planet of Lost Laughter was from Earth. For weeks now he had not slept well, and there were times during his daily lectures when his mind wandered so far from what he was saying that he could not remember afterward what it was he

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had said. His appetite, birdlike to begin with, vanished altogether. He sat for hours at a time in the open lock, gazing lackadaisically toward the city.

He grew more and more despondent. Finally one morning he said to Shim-mu, "It has been a long while since I have been visited by the eldest daughter of the king."

At first, Shim-mu didn't get the message, and he regarded Hwanonin-Anu puzzledly.

"I would be visited by her again."

The *sangu's* first reaction was bewilderment. "But what will be the manner of her sacrifice, O Anu? She has already placed her maidenhead upon the altar. What has she left to give?"

"She has herself to give. And that can be given many times. I would see her tonight."

Shim-mu bowed his head. "It shall be as you wish, O Anu. Upon my return to the temple, I will send word to the king."

The *sangu's* second reaction was elation. He had already dreamed the dream that told him which sacrifices to make and which prayers to utter in order to raise and lower the Temple of Heaven, and now the means of luring Anu away from the Temple had been virtually tossed into his lap by the sky-god himself.

But there were still details to be worked out, among them choosing a confederate who had access to all parts of the palace and devising a way to hold the sky-god prisoner once he had been lured into Nur-ad's chamber. Shim-mu shelved them for the moment: it was enough for now to know that his ambition had been lifted from the realms of fantasizing into the world of hard cold facts.

That night, as the *sangu* had promised, Nur-ad mounted the stairway of the Temple of Heaven. She rushed into Hwanonin's arms. It was cold, and she wore outerclothing made of sheepskin and gloves lined with the fleece of lambs. Defying customs, she had coiffured her black hair into an elaborate swirl of waves and ringlets that made the wig she had worn on her first visit seem plain. Her headdress was a riotous garden of rosettes, and shining pendants shaped like stars hung across her forehead.

"Lion, I have missed thee."

"Princess, I have missed thee too..."

She removed her heavy outer clothing, let it fall to the floor. Beneath it she wore a flowing burnt-orange gown. He took her hand and led her into the control room and thence into his cabin. "I smell growing things," she said.

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"Yes. I have a garden."

He led her into the hydroponic room. She gasped in surprise and from delight. Flowers grew in the vats along the walls. In the center of the room there was a miniature forest of ferns and little trees. He kissed her in the green luminescence.

"Lion, undress me."

Her gown whispered as it crumpled to the floor. She wore nothing underneath it. Her primitive perfume intermingled with the fragrance of the flowers. He removed his own clothing, picked her up and carried her back into the cabin and deposited her on the bed. He knelt and kissed her thighs, her stomach, her breasts. She parted her legs, and he felt the warm wetness of her against his flesh. The nipples of her breasts extended themselves to meet his famished lips. He felt her legs wind round his waist.

He moved up and into her and heard her sigh. Again he felt himself falling through the deeps of space. Around him he heard the whispering of the stars. *Love,* they whispered. *Love*...and the deeps brightened as about him a trillion roses bloomed in the far-flung fields of night.

In the morning, Nur-ad departed. He would have had her remain, but such an arrangement would have clashed too violently with the polygamous character of the god whose avatar he was supposed to be. Instead, he instructed her to mount the temple stairs each evening after the sun had sunk from sight and instructed her to let it be known to her friends and acquaintances that Anu had chosen her to represent all the maidens of Shuruppak in order that they might be free to marry ordinary mortals like themselves.

Gradually winter released its grip upon the land, and warm rains ushered in a sodden spring. Except for their warmth, they were but little different from the rains that had fallen intermittently all winter, but they brought a green flush to the fields and carried with them the promise of spring.

On the debit side, they turned the Tigris and the Euphrates into swollen muddy torrents and brought to mind the countless springs when both had overflowed their banks.

It was the custom in Shuruppak to celebrate the arrival of the New Year by carrying the statue of Ninlil through the streets, the while intoning prayers for a fruitful season. This year, Shim-mu saw to it that the statue of Anu was also carried through the streets so as not to incur the sky-god's wrath and so that he would be fooled into thinking, when he heard about it

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through Nur-ad, that the high priest was his most devoted disciple.

Throughout the ceremony and during the weeks that followed, the *sangu's* mind dwelled upon the plan he had devised to lure Anu from the Temple of Heaven long enough for the *sangu* to apotheosize himself by raising and lowering it. The plan was a simple one: Anu would be told by an as yet to be decided emissary from the palace that Nur-ad was seriously ill; whereupon he would rush to her side, forgetting in his agitation to secure the door of the Temple. He would then be detained in Nur-ad's chamber till after Shim-mu, in the presence of a large number of high-ranking eyewitnesses, performed his feat. Afterward there would be no recourse but to free the sky-god; but with the *sangu* automatically elevated to godhood — or at least demigodhood — by his feat, Anu would not dare to punish him for fear of incurring the displeasure of the people. Instead, he would have to accept Shim-mu as an equal — or at least a near-equal — and abandon his plan to destroy the priesthood.

There was only one drawback: Nur-ad's chamber doorway could be barricaded in the twinkling of an eye, but would a mere barricade suffice to hold a god at bay? Might not Anu walk right through it, or, ignoring it, walk right through the chamber wall? It was true that Shim-mu had never seen Anu walk through a wall, but this did not mean he couldn't.

As often happens, what appeared to be an insuperable problem turned out to be no problem at all. This became apparent during a business call the *sangu* paid the queen early that spring.

The call concerned Queen Il-yan-na's annual donation of six head of cattle to the temple community to insure the perpetual burning of incense in her personal niche in the *Aemenna* (the subchapel in which the clay statue of Anu stood). This year, for some reason, the cattle had not been forthcoming, and it was Shim-mu's job to find out why.

The queen received him in her innermost chamber, a richly appointed room (by Sumerian standards) whose tiny grilled windows provided a view of the fields bordering the Euphrates and of the towering Temple of Heaven. For a member of the "black-haired people," she was quite tall and had only recently gone to fat. Despite her obesity, she still retained traces of her former voluptuous attractiveness, and Shim-mu recalled how, long ago when it had been necessary for him to shave all of his head instead of only part of it, he

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had toyed with the idea of becoming one of her lovers.

By way of introduction to the subject of his visit, he made a joking allusion to the understandable tendency on the part of royalty to forget matters that to them were trivial but which to others were frequently of considerable importance. At this juncture, the queen stopped him cold. "I'm not in the habit of forgetting anything, Shim-mu," she said. "I withheld the cattle."

"You *withheld* them?"

"Yes. Incense burned by fools will no more insure the perpetuation of my beauty than were I to burn it myself!"

Shim-mu blinked. "But the task is performed by the most esteemed of my priests. Sometimes I even perform it myself. Certainly you don't regard *me* as a fool?"

"I regard anyone as a fool who climbs the steps of the so-called Temple of Heaven and fawns at the feet of the false Anu."

Shim-mu was aghast. However much he might hate the sky-god, he did not doubt his divinity. "The most beauteous of all mortal women must have good reason to make so blasphemous an accusation."

"I do indeed. Nur-ad."

"Nur-ad?"

"What manner of god is it that cannot distinguish between a virgin and a slut? Who can enter into a woman and not even note the absence of virgin's blood?"

Hope sent the veins of Shim-mu's temples to throbbing, but incredulity still retained a foothold in his mind. "But the king himself assured me of her purity, of —"

"The king is a fool! Who else but a fool would build a boat high in the hills where En-ki, god of the sweet waters, has never been known to tread? Nur-ad's brother entered into her even before her maidenhair appeared, and he was far from the last. She is nothing but a common slut, and your precious Anu is a fool!"

Shim-mu swallowed. If Anu was a fool, what did that make him?

Well at least he was a fool with the means to avenge his having been made one, and certainly no fool ever had a more powerful ally. Recovering his wits, he said, "Yes, yes, of course he is a fool. I suspected as much from the very beginning, and that is why I have invented a plan to expose him. You, Queen Il-yan-na, can be of immense help to me in carrying it out."

After swearing her to secrecy, he told her what he had in mind. "It would be unthinkable, of course, beauteous lady." he said, "for you to deliver the message in person, and I myself cannot deliver it because Anu might become sus-

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picious. Thus, it must be entrusted to your most faithful lady-in-waiting. However, you yourself must make the arrangements for barricading Anu in Nur-ad's chamber."

"*You* are going to raise the Temple of Heaven?" Queen Il-yan-na laughed raucously. "You, who can no longer even raise your own member are going to raise a *mountain?*" She laughed again, and the *sangu* was somehow reminded of the garbage congeries lining Shuruppak's south wall. "Very well, Shim-mu — you shall have the opportunity. I will see to it that the message is delivered tomorrow morning while Nur-ad is sleeping off her nightly exertions, and when her lover enters her chamber, I will see to it that he stays there. Now begone, Shim-mu — begone!"

Hypertension and humiliation coloring his face a violent red, Shim-mu withdrew from the queen's presence. Once the palace was behind him, he hurried to the *Aemenna.* There, he prayed to the real Anu. The clay one.

"Lion, caress me."

"Princess, you have given me the gift of love."

"Lion, take me."

"Thy legs are as two pillars surmounted by a nest of love."

"Lion, enter the nest."

"The nest of love is honey-filled; honey-filled is the nest of love."

"Deeper."

"Princess, I am falling, falling from the pinnacles of pain —"

"Thy loins are as strokes of summer lightning —"

"Into the nest of love —"

"Lion..."

It would take years for the moist Mesopotamian climate to eat through the thick hull of the *Star of Stars,* but the process had already begun.

Standing in the midmorning sunlight staring at the large rusted area he had just discovered high on the foreside of the substructure, Hwanonin knew dismay.

Why dismay? Long before seepage could possibly occur, his mission would be finished; he would have said all he had to say and be on his way back to the Planet of Lost Laughter.

Was it possible he no longer wished to return? Did his dismay arise from the realization that the rusted area made his leaving Earth inevitable? Made his leaving Nur-ad inevitable?

For him to take her with him was unthinkable. She would go — gladly. But she belonged to a young civilization. An old civilization might be able to guide a young one along the proper paths; but essentially, old civilizations were

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like old men: they spent their decining years sitting in the warm rays of dying suns, meditating not upon what they were going to do but upon what they had already done.

On the Planet of Lost Laughter, Nur-ad would be as a chained lioness among sheep.

Sadly Hwanonin gazed upon the land he had come to love.

The spring rains, for the time being at least, had ceased. The vegetation lining the banks of the still swollen Euphrates was a moist rich green. Here and there, palm trees stood like slender girls with garish headdresses. The members of the temple community whose turn it was to work were in the fields, plying their crude implements. From the city, barely audible above the roar of the Euphrates, came the sound of song.

Presently he found himself gazing in the direction of the Exalted Gate. From it had emerged a woman riding upon an ass. As he watched, she guided the ass onto the damp field where last summer millet had undulated in the wind. Her head and shoulders were covered by a scarlet mantle. Her face at this distance was no more than a white blur, but he knew it was not Nur-ad's.

When it became evident that her destination was the *Star of Stars,* he made his way to the stairs and descended them to meet her. She dismounted and knelt before him. He glimpsed an elaborate neckpiece of lapis lazuli and from it surmised that she came from the palace, that she might be a lady-in-waiting to the queen.

She introduced herself as such when he told her to stand up. Then she said, "The queen bids you to accompany me back to the palace at once, O Anu. It is Nur-ad. She is gravely ill."

Without a backward look at the *Star of Stars,* Hwanonin began striding with god-long steps toward the Exalted Gate.

We see Shim-mu standing villainously in the wings. Now, as Hwanonin-Anu exits, we see him step furtively up on the stage. He is wearing a blue cloak that falls all the way to his ankles, and there is a bag slung over his shoulder. It contains three waterfowls and three turtledoves.

He emerges from the Exalted Gate and makes his way upstage toward the looming *Star of Stars.* His *nubanda* follows, then come the *masmasu*-priests, then the *eribbitu*-priests, then the *urigallu*-priests, and finally the acolytes. Bringing up the rear are carefully selected members of the aristocracy and the military whom the acolytes have alerted to the forthcoming event.

We see the procession come to a

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halt halfway to the *Star of Stars;* then we see the *sangu* walk alone to the foot of the stairs and begin to climb them. Three quarters of the way to the landing, he turns and dramatically doffs his blue cloak. He pulls his sacrificial dagger from his belt and stands there for a moment in the morning sunlight, gazing defiantly at the sky. Finally we see him turn around and boldly climb the rest of the distance to the landing, step through the open lock and disappear.

Actually, Shim-mu's boldness was pure bravado. Terror, self-doubt, desperation — these were his major emotions as he walked through Hwanonin-Anu's living quarters, stepped into the control room and halted before the "altar."

The sheer complexity of the altar overawed him. There were three levels, each inlaid with multicolored shells. The first was even with his knees, the second with his waist and the third with his chest. The entire structure rested upon a transparent base filled with silver threads and golden beads, arranged in a pattern that was utterly incomprehensible to him.

He told himself that it did not need to be comprehensible to him, that nothing in the entire temple needed to be comprehensible to him. All that he had to do to accomplish his end was to perform the sacrifices and intone the prayers specified in his dream. The three waterfowls were for raising the temple, the three turtledoves for lowering it. Shim-mu could understand, now that he had seen the altar at close range, why the dream had specified three of each kind.

Hands trembling, he opened the bag and pulled out one of the three waterfowls. He held it over the highest tier; then, intoning the appropriate prayer, he slit the poor creature's throat and waved the shuddering body back and forth till the tier was covered with blood.

He repeated the process with the second waterfowl, this time saturating the middle tier with blood. He slit the throat of the third, saturating the lowest tier. Then he stepped back and waited.

Nothing happened.

Nothing, that is, that Shim-mu was aware of.

Actually, however, a number of things were going on. Although the controls were locked into place and could not in any case have been set in their proper sequence by anyone except Hwanonin himself, the console was by no means impervious to seepage. A quantity of the blood of the three waterfowl had already trickled down into the maze of wiring in the base and established a series of unorthodox interrelationships. These resulted presently in the escape of Z2-/-

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radiation into the deactivated oxygen-generating system, the draining of water from the reservoir into the bin and the accidental activation of the ∠2-/-radiation converter.

Shim-mu's first intimation that all was not quite as it had been before and would never be again was when he glanced down in response to a tingling of his right hand and saw five fleshless fingers gripping the hilt of the sacrificial dagger. He screamed.

An awesome shudder racked the massive Temple of Heaven. There was a great popping sound as the imbedded base of the substructure broke free from the earth. It was as though Ninlil had eructed after a heavy meal.

Shim-mu screamed again. This time the escaping ∠2/-radiation had found his left foot. He saw the gray bones of his metatarsus and phalanges.

As the awed secular and nonsecular audience fell back, the temple rose into the sky. Slowly at first, then with terrifying swiftness. Priest, merchant, general — all broke and ran wildly toward the city, accompanied by the workers in the nearby fields who had also borne witness to Shim-mu's success. Near the relative safety of the wall, surrounded by the startled pilgrims from Sippar, Larak, Eridu and Ur, the more courageous turned and looked back. They had to raise their eyes to see the Temple of Heaven, for it was high in the sky and had diminished to the size of a bird,

Abruptly the bird burst, and vanished.

The heavens darkened, and Utu the sun-god disappeared. Blue bolts of lightning shattered the sky. Thunder shook the Land of Shinar.

It began to rain.

Hwanonin witnessed the disintegration of the *Star of Stars* through the grilled window of Nur-ad's chamber. He had guessed Shim-mu's intention the moment he found Nur-ad well and himself a prisoner in her room; now he deduced the imbalance that Shim-mu had accidentally created, although he had no idea how the *sangu* had managed it. At first he drew no connection between the massive release of ∠2-/-radiation and the sudden downpour. But when the rain turned torrential, he knew. ∠2-/ was an alien element: the downpour was a meteorological side effect of its absorption into Earth's atmosphere.

The sound of the falling rain filled the room. Running through it like a hellish leitmotif was the crescendo roar of the Euphrates.

He had already tried to move the heavy stele that had been used to block the archway leading to the

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corridor. Now, with Nur-ad's help, he tried again. But apparently the stele had been braced from the other side: it would not budge.

Hwanonin returned to the window, smashed its baked-clay bars and leaned over the mud-brick sill. The palace wall dropped sheerly down to the rain-wet paving of an inner courtyard. He drew back into the room, his black hair soaking wet. A gust of wind blew sheets of rain through the window, and a puddle formed upon the floor.

It was only a matter of time before the Euphrates would reach flood level if the downpour continued. The fields and the city streets would be inundated, and while the water would never reach as high as Nur-ad's chamber, she and Hwanonin would be marooned without food or drinkable water, perhaps for weeks.

If, somehow, they could escape from the palace, they might be able to reach the hills to the east of the city. There, they would be safe.

"Nur-ad, isn't there someone you could call who would let us out?"

"I will try, Lion."

Placing her mouth close to the stele's juncture with the arch, she began screaming the names of her handmaidens, and screaming for the Officer of the Palace Guard. Between screams, footsteps were faintly audible in the corridor beyond the stele, but they invariably died away, and the stele remained where it was.

"It is my stepmother's work!" Nur-ad said vehemently. "She hates me — she always has. Shim-mu visited her yesterday. I think she connived with him to imprison you here so that Shim-mu could destroy your temple."

The Euphrates was not visible from Nur-ad's window, yet both knew the moment it burst its banks. They knew from the screams that rose from the city's streets, from the new note that came into the river's roar. And presently they knew from the muddy river water that crept into the courtyard below.

"Lion, we are doomed."

Lightning tore the lowering sky to tatters; thunder shook the palace to its mud-brick roots. Hwanonin took Nur-ad into his arms, thinking to reassure her. But she needed reassurance of another kind. She pulled him over to her bed and down upon it. It astonished him that at such a moment she could want him, even more that he could want her. She was wearing a flimsy sleeping gown; savagely he tore it away. He kissed her feet, her knees, her thighs, her breasts. She moaned, her hips rising and falling rhythmically. She wound her legs around his waist, dug her heels into

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the small of his back. The sound of her breathing rose above the roar of the deluge. When he entered into her, he tried to enter all of himself; she uttered little short screams of bliss. He knew the furious rise and fall of his hips and hers coming to meet them, the blending of their pubic hair and the warm wetness, the warm wet wet wet wetness, and then the outflowing of himself and the savage spasms of her simultaneous orgasm; and still her hips rose and fell and his descended to meet them; she screamed as a second orgasm shook her, moaned at a third and a fourth; again he felt an outflowing of himself, and slowly subsided upon her.

A scraping sound came from the corridor, followed by a resounding crash. A bulky man in his middle years entered the room. Hwanonin stared at him with glazed eyes.

The man wore an ankle-length skirt. A copper band encircling his neck proclaimed him to be a skilled artisan. He said to Nur-ad, either unaware of Hwanonin's identity or not wishing to embarrass him, "The king wishes you to join him in the hills. I will conduct you there when you are ready." Visibly shocked, he withdrew from the room.

Nur-ad dressed quickly. "You will come with me, Lion. Hurry!"

All was pandemonium in the palace. Servants, soldiers, pages, ladies-in-waiting, kitchen wenches — all milled about in the chambers and the corridors, packing their belongings or trying to make their way out of the building. A section of the east palace wall had collapsed, and rain drove through the dark rooms and halls. In places, puddles were inches deep upon the floor. The messenger from the king knew the shortest way to the street, and soon he, Hwanonin and Nur-ad were walking through knee-deep muddy water toward the Exalted Gate. They were joined by others along the way, and Hwanonin realized that it was not Nur-ad alone whom the king had sent for. Nor, aside from Nur-ad, had he sent for members of the royalty. The people walking with them were clearly from the working classes, and many of them wore neck bands signifying them to be skilled artisans or craftsmen.

The fields were a vast quagmire awash with rain- and river-water that grew deeper by the second. Darkness lay heavily over the land, dissolving with each lightning flash, only to rematerialize an instant later. Walls of rain moved back and forth in the constantly shifting wind. The water came to Hwanonin's hips, to Nur-ad's waist.

At length he could make out the hills. They acquired ephemeral

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substance with each lightning flash, then faded into dark, unreal blurs. He held Nur-ad's hand tightly, steadying her when she stumbled, pulling her free when she became mired in the mud. Her black hair was plastered against her cheeks and neck; the gown she had grabbed at random was already bedraggled and clung to her as tightly as though it were her skin. It shocked him to find desire for her building up in him again. Was he mad? Or did she possess a quality the women of the Planet of Lost Laughter lacked? Had he rediscovered something his own race had lost in its determination to replace the coarse apparel of savagery with the smooth silks of civilization?

The mech-mentor's stickman analogy had been wrong on one count at least: Hwanonin had bent — not much, perhaps, but he was no longer quite the same person who had built the *Star of Stars*.

He hoped fervently that it had been wrong on the second count too. The coarse apparel of savagery might be preferable in some instances to the smooth silks of civilization, but in others — such as the senseless waging of internecine wars and the erecting of elaborate shrines to glorify psychopathic deities — it could only be deplored. In his own mind there was no doubt that he had bent his audience to some extent. But now that his lectures were over — probably for good — might not those same listeners who had given him their whole-hearted attention behave like the mech-mentor's stickman and spring back to their original form?

One thing at least was certain: he could not leave Earth now even if he wanted to. In a way, he was responsible for the present deluge, and someday, he knew, the fact would haunt him. But it did not haunt him now. Instead, he was glad that the *Star of Stars* had disintegrated. For Hwanonin had come to know himself quite well, and he knew that if the means for leaving Earth still existed, he might still be civilized enough to make the wrong decision.

He became aware that now the water came only to his knees, and he thought at first that the flood was receding. Then he realized that he and Nur-ad and the others had reached higher ground. The hills lay immediately before them. Upon one of them, in the brief brightnesses of the lightning flashes, Hwanonin discerned a strange structure. Square, multi-tiered and with no apparent prow or stern, it had the aspect of an ungainly house. A ramp extended down to the ground from a large aperture in one of its four sides,

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and as Hwanonin grew closer, he saw that livestock were being herded into the interior.

He halted, and so did Nur-ad and the others. Presently a man came walking through the downpour to meet them. He greeted Nur-ad, and Hwanonin knew that he was looking at the king. In the immediate background, standing bedraggled in the pouring rain, were several young people — probably Nur-ad's brothers and sisters. Significantly, the queen was nowhere to be seen.

The king regarded Hwanonin for some time, whether in awe or annoyance, or both, Hwanonin could not tell. Finally, "I did not expect you, O Anu," he said, "but room can always be made for a god. My captain will see to it that you and Nur-ad have ample space. Soon, the waters will — "

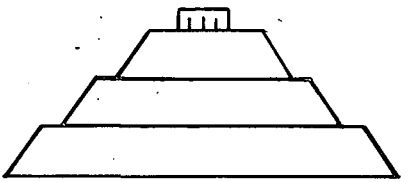
Here, the transspace holograms come to a close.

For the ending of our story we must turn first to Mesopotamian legend. From it, we learn that King Zu-is-udu, or Zuisudu, was the Sumerian prototype of the Babylonian Ut Napishtim, and, later on, of the Biblical Noah.

But legend makes no mention of a god who descended from heaven in a great temple, who spoke words of wisdom to the multitude and who survived the Flood in King Zu-is-udu's ark. Is it possible that the memory of Hwanonin's tenure as Anu disappeared altogether from the minds of men?

It did not wholly disappear, but to find evidence of it we must turn from Mesopotamian legend to Mesopotamian architecture, meanwhile keeping in mind that the collective unconscious is a vast storehouse of handed-down memories and impressions, and that what one generation creates is often no more than an artistic recrudescence of what a previous generation experienced.

Here, in outline form, is the ziggurat, or tiered pyramid, of Ur-Nammu, built by Ur-Nammu and his son Dungi, circa 2112 B.C.:



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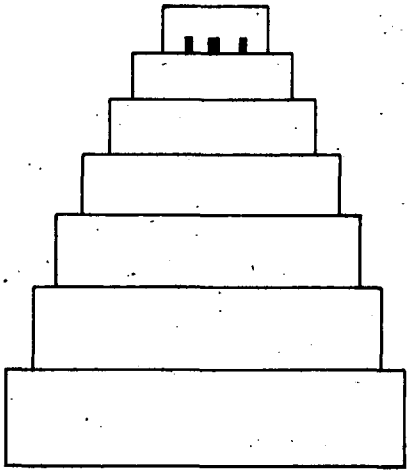
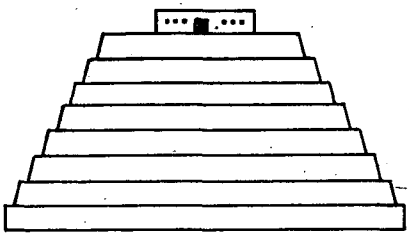
Here, in similar form, is the Babylonian ziggurat of Etemenanki, considered by most archaeologists to have been the Tower of Babel:



And here, in simplified form, is Hwanonin's blueprint for the *Star of Stars:*



Just because our story ends before it begins does not mean it ends unhappily. Nor does Hwanonin's failure to make the cuneiform tablets of the *Gilgamesh Epic* mean that the disintegration of the *Star of Stars* reduced him to a nonentity. Legend, like history, for the most part records the deeds of madmen and murderers. Hwanonin was neither.

As for his failure to accomplish his purpose on Earth, how many men *do* accomplish their purpose on Earth? And when all is said and done, do not most men's lives amount to broken dreams?

No, there is no reason to suppose that Hwanonin and Nur-ad did not lead full and happy lives. On the contrary, there is every reason to suppose that they did. If we listen hard enough to the wind of time that sometimes breathes out of the past, we can hear them whispering softly in the night —

Lion, caress me.

Princess, you have given me the gift of love...

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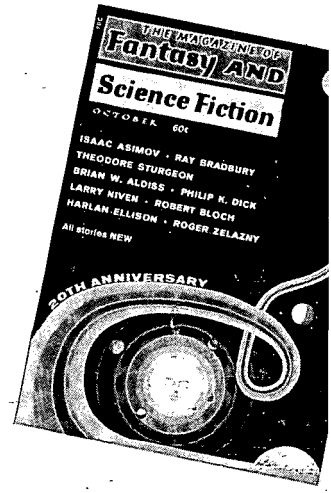

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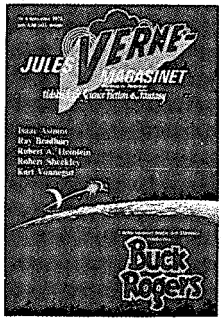

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